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Draft Environmental Impact Report

SOUTH OF MARKET PLAN

85.463E

Draft EIR Publication Date: August 5, 1988
Draft EIR Public Hearing Date: October 20, 1988
Draft EIR Public Comment Period: October 20, 1988

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SOUTH OF MARKET PLAN
ENVIRONMENTAL IMPACT REPORT

TABLE OF CONTENTS

	<u>PAGE</u>
I. SUMMARY	1
II. PROJECT DESCRIPTION	21
III. ENVIRONMENTAL SETTING AND IMPACTS OF THE SOUTH OF MARKET PLAN	
<u>Introduction</u>	42
A. <u>Land Use, Zoning and Employment</u>	49
B. <u>Population and Housing</u>	86
C. <u>Transportation</u>	96
D. <u>Air Quality</u>	135
E. <u>Energy</u>	145
F. <u>Geology</u>	154
G. <u>Community Services</u>	175
H. <u>Growth Inducement</u>	180
IV. MITIGATION MEASURES	182
V. UNAVOIDABLE SIGNIFICANT IMPACTS	199
VI. ALTERNATIVES	
A. <u>No Project - Existing Zoning</u>	202
B. <u>No Secondary Office District</u>	205
C. <u>More Housing</u>	212
D. <u>No Change - Existing Conditions</u>	221
VII. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY	222
VIII. SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED	223
IX. EIR AUTHORS, ORGANIZATIONS AND PERSONS CONSULTED	224

X.	DISTRIBUTION LIST	225
XI.	APPENDICES	
	<u>A.Initial Study</u>	A-1
	<u>B.Land Use and Employment Analysis</u>	B-1
	<u>C.Transportation Methodology</u>	C-1
	<u>D. Air Pollutant Summary 1984-1986</u>	D-1

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1. Regional Location	22
2. Site Location	22
3. Proposed Use Districts (Zoning)	31
4. Proposed Height and Bulk Districts	32
5. South of Market/Folsom Survey Area	46
6. Combined Survey Area	46
7. Existing Use Districts (Zoning)	51
8. Existing Height Districts	53
9. Transportation Screenlines	97
10. Travel Assignment Areas	99
11. Groundshaking Intensity	156
12. Subsidence/Liquefaction	158
13. Alternative 2 - Proposed Use Districts	206
14. Alternative 3 - Proposed Use Districts	213
15. Alternative 3 - Proposed Height Districts	214

List of Tables

<u>Table</u>	<u>Page</u>
1. Comparison of Existing and Proposed South of Market Zoning Controls ...	70
2. South of Market Space by Use 1985 and 2000	73
3. South of Market Employment by Business Activity	74
4. South of Market Person Trips by Mode 1985 and 2000	113
5. Cumulative Outbound Transit Ridership 1985 and 2000	115
6. Cumulative Regional Traffic Demand 1985 and 2000	120
7. South of Market Intersections Level of Service 1985 and 2000	125
8. South of Market and Downtown Vicinity Parking Demand 1985 and 2000	128
9. SOM Plan Daily Pollutant Emissions	140
10. Curbside Carbon Monoxide Concentrations	143
11. South of Market Energy Consumption for Building Operation 1985 and 2000	150
12. South of Market Transportation Energy Consumption 1985 and 2000	151
13. Regional Energy Consumption	152

I. SUMMARY

A. INTRODUCTION

The proposed project is the South of Market Plan, Proposal for Adoption, (hereafter the SOM Plan, or the project) published by the Department of City Planning in June 1988. The Plan is the culmination of the Department's research and analysis of land use issues in the South of Market area (SOM) conducted over the last three years. It contains Master Plan policies and is accompanied by permanent zoning controls that are designed to preserve this area, generally bounded by Second, Townsend, Division, Thirteenth and Mission Streets, and adjacent to the Downtown (C-3) districts, for rent-sensitive commercial, light-industrial and residential uses. This would be accomplished by establishing separate use subdistricts, and directing opportunities for higher intensity land uses to areas that are least likely to displace or disrupt lower-rent activities.

This Environmental Impact Report (EIR) summary describes briefly: the South of Market Plan and the major provisions of the implementing legislation; the major environmental effects associated with the Plan; the principal measures that have been identified to mitigate adverse impacts of the Plan; and alternatives to the South of Market Plan which are analyzed in the EIR.

This is a program EIR that provides a comprehensive analysis of potential impacts of the proposed SOM plan, as well as cumulative impacts in a citywide and regional context. The project is not a proposal for specific development; Master Plan and zoning changes do not directly generate or guarantee development. As such, this EIR does not attempt, nor would it be possible, to cover all site-specific impacts of future development in the SOM. The primary function of this program EIR is to serve as a central resource document for cumulative impact analyses and mitigation to be referenced during review of

future developments that may be proposed in the SOM area. Individual development projects proposed in the SOM in the future will be subject to separate environmental review, to analyze potential impacts as may be identified based on site layout and design, and to project-specific mitigation as necessary.

The EIR impact analyses are based on forecasts of growth in employment under the policies and provisions proposed in the SOM Plan and its zoning ordinances for the year 2000. Existing and future SOM economic activity was estimated for different economic sectors or business activities. The setting estimates and forecasts of future conditions include a close analysis of the types of activities and functions located in the SOM area and how this mix would be likely to change over the next fifteen years given national and regional business trends and changes in location opportunities. This analysis considered the relationship between the SOM and other areas of the Greater Downtown Area (the downtown C-3 districts; Northeast Waterfront, Mission Bay, Civic Center/South Van Ness), the rest of San Francisco, and the rest of the Bay Area region in terms of growth potential and types of economic activity. Thus, SOM area economic growth is projected and analyzed within the context of local, regional, and national economic factors and trends.

B. DESCRIPTION OF THE SOUTH OF MARKET PLAN

Master Plan Objectives and Policies

The South of Market Plan proposes policies and objectives to guide future development in the SOM into the next century. Currently, the SOM contains lower-rent commercial space for uses such as industrial and home and business services, which provide goods and services to downtown San Francisco and to regional markets and also lower-rent office space and back office. The SOM also contains a substantial supply of affordable housing units.

The objectives of the SOM Plan are to reserve the SOM for the continuation and

expansion of these types of uses. They are presented in four major topical areas: residential space; business activity; transportation; and neighborhood livability. The stated objectives of the plan are summarized below:

Residential Space. Preserve existing affordable housing and encourage the development of new affordable housing. Promote development of in-fill housing and mixed-use development. Promote the development of artists' live/work units in commercial space and provide a mechanism to legalize existing live/work units.

Business Activity. Protect existing, and facilitate the expansion of, industrial, artisan, home and business service, and neighborhood-serving retail and community service activities. Limit higher-rent paying uses, such as office space, to specific locations to reduce potential displacement of existing lower-rent business service and industrial uses.

Transportation. Provide adequate transportation services to maintain the economic vitality of the South of Market, and to improve the livability of the area for residents, workers and visitors. Provide incentives for use of transit, carpools, vanpools, and taxis, and reduce dependence on automobile for SOM-area commuters. Provide adequate parking and loading space for SOM businesses and residents and promote efficient use of existing parking resources. Institute a residential preferential parking program, improve SOM pedestrian circulation and maintain the availability of rail freight to existing SOM users and the Port.

Other transportation-related policies of the Plan include a call for extension of the MUNI-Metro to the Caltrain terminal at Fourth and Townsend (and subsequently to Mission Bay should a development plan be approved for that area), and expanded transit service frequencies in the SOM.

Neighborhood Livability. Preserve existing amenities for SOM residents,

workers and visitors. Preserve the existing scale of development, protect architecturally or historically significant buildings, create new parks and recreation facilities and encourage the sensitive location and expansion of essential neighborhood-serving community services.

Specifically, the plan calls for the acquisition and development of a large scale park in the western SOM.

Proposed Zoning Controls

In order to implement the objectives of the SOM Plan the Department of City Planning has recommended amendments to the City Planning Code and zoning maps. The proposed controls designate eight use districts (see Figure 3, page 31): one is a wholly residential district; three are mixed use, residential/commercial districts; two are wholly commercial districts; one is an "overlay" nighttime entertainment district; and one would establish a P (Public) use district.

The wholly residential district is the Residential Enclave District (RED). The three mixed residential/commercial districts are the Residential/Service District (RSD); the South Park District (SPD) and the Service/Light Industrial/Residential District (SLR). The wholly commercial districts are the Service/Light Industrial District (SLI) and the Service/Secondary Office District (SSO). The newly created Nighttime Entertainment District would encompass portions of the SLI and SSO districts.

The SLR and SLI districts would permit, among other uses, light-industrial, business service and neighborhood-serving retail activities comparable to the existing mix of land uses in the SOM. New office space would be allowed only in the SSO district.

The RED districts would facilitate the preservation of existing residential enclaves interspersed throughout the SOM. The RED, SLR and SPD districts

I. SUMMARY

would allow for new residential construction at comparable densities to surrounding uses. Some of the key regulatory measures of the rezoning are summarized below.

Building heights would generally be restricted to a maximum height of 50 feet or less except in the following instances:

One height transition zone adjacent to the Yerba Buena Center (YBC) area where heights above 40 feet up to 85 feet could be permitted by conditional use authorization of the City Planning Commission.

Two 66 foot height districts, one fronting Townsend Street and one fronting Mission Street.

One 130 foot height district adjacent to the C-3 district at Folsom and Second Streets.

One 80 foot height districts adjacent to the 130 foot height district.

One 85 foot height district including properties fronting on Sixth Street from Howard Street north.

Base Floor Area Ratio, (FAR), the ratio of gross building floor area to the area of a given site, would limit development of commercial floor area. FAR limits in the SLR and SLI districts would be 2.5:1. In the SSO district, properties within the 40 or 50 foot height districts would have an FAR limit of 3.0:1, and a limit of 4.0:1 for properties fronting on Townsend Street within the 66, 80 and 130 foot height district. FAR limits in the Residential Districts would be range from 1.8:1 to 1:1. FAR limitations would not apply to residential space, live/work space in residential occupancy, and cultural/arts and human service activities.

Usable open space would be required for non-residential uses at specified

rates ranging one sq. ft. of open space per 250 gross sq. ft. of development (1:250), to a maximum of 1:90. Alternatively, the controls allow payment of an in-lieu fee at specified rates based on land use.

New parking requirements for various land uses are proposed as follows: one space for each 750 square feet (1:750) of occupied floor area for office space; 1:1000 for workspace for architects and engineers; a 1:2000 requirement for artist and artisan production and performance spaces, and live/work units. One space would be required per dwelling unit in all SOM districts but for the RSD which would require one per four units. All required parking spaces for dwelling units could be compact car-sized.

C. ENVIRONMENTAL SETTING

The SOM Plan area consists of approximately 460 acres of land devoted to a wide variety of uses in close proximity to one another including neighborhood-serving commercial uses, professional offices, home and business services, industrial activities, and residences. The rezoning area can be divided into two major subareas in terms of existing land uses and economic activity. The area west of Fourth Street is characterized by small-scale, low-rise buildings housing "traditional" SOM business activities. These include service, manufacturing, distribution and wholesale establishments. Interspersed throughout this area are residential enclaves, located mostly on alleyways, which contain low to moderate density residential development.

The area to the east of Fourth Street contains most of the office space in the SOM and is the area most affected by development pressure from the downtown core. This area has been the location of both new office development and conversion of older industrial and warehouse space to offices. Buildings here tend to be larger (larger floor plates and more square feet per building) and taller than those west of Fourth Street. Development could still be characterized as low-rise, with building heights generally two to four stories and 50 feet or less. As of 1985 employment in the SOM totaled approximately

23,400 workers. There were approximately 8,000 residents in the rezoning area.

In addition there is a substantial amount of undeveloped land devoted to parking lots, serving commuters to the SOM and the Downtown, rail and highway rights-of-ways, storage and miscellaneous sites without buildings. Approximately 230 acres of land falls within this category.

San Francisco Master Plan

The Master Plan contains various elements which include generalized, citywide goals and policies. In addition, the Master Plan contains area plans addressing specific parts of the City. The South of Market Plan would be an area plan containing objectives and policies for the South of Market area. It would be subject to review and adoption by the City Planning Commission as part of the San Francisco Master Plan.

Each element of the Master Plan contains statements of goals, objectives, and policies which represent the current official, broad and general recommendations of the City Planning Commission for the development of the City in accordance with present and future needs. In this EIR, those objectives and policies relevant to environmental impacts of the South of Market Plan are identified and described under the appropriate topic heading.

D. ENVIRONMENTAL IMPACTS OF THE SOUTH OF MARKET PLAN

In the Initial Study for the project (see Appendix A, page A-1) it was determined that the proposed project would have no significant effect in the following areas: urban design and visual quality; wind and shadow; noise; biology; water; community services and utilities but for fire, police and sewer service; prehistoric, historic and cultural resources; and hazards. These issues require no further discussion, and are not included in the scope of the EIR. Not all issues covered in the EIR are physical environmental

impacts as defined under the California Environmental Quality Act (CEQA). Some of the discussion contained in this EIR is socioeconomic in nature and is provided for additional informational purposes only.

Zoning, Land Use and Employment

In 2000, there would be about 30,000 workers in the SOM rezoning area. Employment in the is forecast to grow by about 6,850 jobs between 1985 and 2000. Total building space in the SOM is forecast to increase from 17.3 to 18.6 million gross square feet. Most growth in the SOM in terms of both employment and space use is expected in office activities. Employment in service and sales activities are expected to show moderate employment growth. Manufacturing and distribution activities employment is expected to remain constant or decline.

An increase of less than 10% in total building space is forecast in the SOM to 2000. This moderate increase in space reflects the effects of the proposed reduction in commercial FAR and building heights, and the limitations on new office space contained in the SOM controls. It also reflects the supply of vacant space that is available for absorption by employment growth. Much of this space is vacant conversions of existing space from industrial to potential office use. There is also considerable office space that has been approved but is either under construction or yet to be built. Consequently, the net addition of building space to the SOM, beyond existing and already approved space, would be minimized.

As most of the forecast employment growth in the area is expected to be accommodated in rehabilitated or converted space rather than newly-constructed space, and the controls generally reduce the maximum allowable building envelope, physical building form in the SOM is not expected to change substantially.

The proposed controls would reduce overall development potential and limit

office uses in the area relative to existing controls. The result would be less pressure to convert existing occupied space to higher-rent-paying office uses than would otherwise occur. This is likely to benefit service uses with a downtown client base, which value proximity to the central business district and would otherwise be competing with office uses for comparable space. It would also benefit newer production activities, "cottage industries" such as film and video production which would be more likely to expand in the area under the Plan than under existing controls. Large space users with older facilities in the area, such as manufacturing and certain distribution activities, may remain in the area longer due to less competition for space from other uses and reduced incentive for resale. In the longer term, however, older large space uses will continue to relocate outside the SOM and the downtown due to the economic advantages of outlying areas for this kind of activity, including less expensive space for expansion, and convenient access to markets.

In the areas where office space would be allowed, the SS0 districts, there would be more competition for the relatively more limited amount of office space that would be available under the SOM Plan than under the existing zoning scenario. Consequently, office rents would be higher in these locations.

Housing and Population

Housing and population within the rezoning area is not expected to change significantly in the forecast period. Generally, no growth, or a slight decline in both population and housing is expected in the project area.

Transportation

Because downtown San Francisco serves as a core of the regional transportation network, people travelling to and from the SOM must share the transportation system with people travelling to and from the C-3 District, and to destinations in other parts of San Francisco and the region. Therefore the

analysis of transportation conditions generated by the proposed SOM Plan/rezoning in this EIR examines cumulative travel at the selected screenlines, of which SOM-based travel is one component. Thus, the impacts of SOM-based travel are assessed in conjunction with regional travel demand on the transportation system. The results of the transportation analysis discussed in the impacts section and shown in the accompanying tables present cumulative travel demand projections, and estimates of the proportion of that demand attributable to the SOM rezoning area, under the proposed policies of the SOM Plan.

As explained in the Introduction to the Setting and Impacts Chapter, page 42, employment forecasts were developed for the SOM Plan area and for surrounding areas for which employee survey information was available. This included the C-3 District and additional parts of the south of market area (outside the SOM Plan areas) and Showplace Square. The "survey area" boundaries are shown in Figures 5 and 6, page 46. As explained further in the Transportation Section page 97, and in Appendix C, page C-1, the travel demand analysis was performed at a greater level of detail for the survey area than for other regional travel at the transportation screenlines. Nonetheless, estimates of regional or "through" travel, as well as travel from the survey area, were explicitly considered in the cumulative transportation analysis. The methodology and assumptions underlying the analysis are summarized in the Transportation Section and described in detail in Appendix C, page C-1.

Increased employment in the SOM under the Plan would generate an approximate 23% increase in peak-hour and 26% increase in peak-period SOM-generated travel demand at the cumulative travel screenlines. These increases are approximately five percent less than would be expected under the existing zoning scenario. SOM travel at the screenlines under the Plan would represent approximately three to nine percent of the cumulative total in any regional travel corridor. SOM-based travel on MUNI would be five percent or less of the total during the periods analyzed in all but the southeast corridor. SOM-based travel on the MUNI southeast corridor would be 13 and 14 percent of

the cumulative total in the peak period and peak hour, respectively. Impacts on the transportation system by corridor are as follows:

East Bay. The East Bay corridor would be the most heavily impacted regional travel corridor. Total travel demand in this corridor is estimated to exceed system capacity through the peak period. In year 2000, the Bay Bridge would operate at LOS F throughout the peak period (see Appendix C for a description of LOS). It is estimated that regional traffic impacts on this corridor through the peak period cannot be mitigated given reasonable assumptions about survey area travel patterns, and the future transit capacity assumed in this analysis. Regional traffic in this corridor could not be accommodated within the peak period without changes in regional, non-work and non-survey area travel patterns. It is estimated that the Bay Bridge corridor would be at capacity beyond the 4-6 P.M. peak period. Congestion could extend for about 4 hours. Peak-of-the-peak conditions (i.e. jammed conditions with limited traffic movement) would extend over longer periods of time than currently and an increasing number of motorists would experience delays during their commute.

Generally, transit demand in the East Bay would fully utilize the estimated future capacity of BART and AC Transit through the peak period. In the peak hour, BART service to the East Bay would decrease from LOS D to F. Ridership demand Transbay would approximate BART's stated service objective of 1.5 passengers per seat (p/s) (see the Transportation Section page 108 for discussion of apparent discrepancy between LOS calculation for BART relative to the service objective). AC transit LOS would decrease from C to E. AC Transit p/s would be 1.3 in the peak hour, which would not meet the agency's stated service objective of 1.25 p/s.

For peak period service in the East Bay corridor, BART Transbay would deteriorate from the current LOS E to LOS F. Transbay service would approximate the service objective of 1.5 p/s. AC Transit service would

deteriorate from C to D. The service objective of 1.25 p/s would be achieved.

North Bay. It is estimated that traffic demand to the North Bay in the year 2000 would be approximately equal to capacity. Transit and ferry service would meet carriers' service objectives and provide one seat per passenger in both the peak period and peak hour. In the peak hour, Golden Gate bus service would change from the current LOS B to LOS C. Golden Gate and Tiburon ferry service would remain at their current LOS of C and B, respectively.

During the peak period, Golden Gate Bus service would decline from the current LOS B to LOS C. Golden Gate and Tiburon Ferry ferry service would remain at the current LOS of A.

South Bay. In the South Bay corridor, the traffic estimates for 2000 indicate an unbalanced demand between the two freeway facilities with Highway 101 at 110 percent of capacity and 1-280 at only 74 percent of capacity. Total traffic demand would be approximately 92% of corridor capacity in the peak hour and 95% in the peak period. For the South Bay analysis, the additional trips on Highway 101 were assumed to shift outside of the peak two hour period, as it was estimated that there would be adequate room at the screenline to accommodate these trips during the peak three hour period (in the North Bay and East Bay corridors there was not adequate capacity outside the peak two hour period to accommodate a temporal rather than a modal shift).

All transit carriers serving the South Bay would meet their service objectives in the peak period and the peak hour and provide at least one seat per passenger.

San Francisco. In the peak hour, Levels of Service (LOS) for MUNI would remain at the current level of D in the northeast, northwest and southeast

travel corridors, and improve from D to C in the southwest corridor. P/S ratios would remain below 1.25 in all corridors.

In the peak period, MUNI service to all corridors would be at LOS D. This would represent no change for the northeast, northwest and southwest corridors and a change from C to D for the southeast corridor. MUNI would achieve its targeted average passenger per seat (p/s) ratios of 1.25 p/s in all corridors.

Peak operating conditions on San Francisco local streets would be expected to deteriorate by 2000. Levels of Service (LOS) at the eight freeway ramps and intersections studied for this EIR currently range from A to F (see Appendix C for a description of intersection levels of service). In the year 2000, all of the intersections studied are projected to have an LOS of E or F but for Seventh and Harrison Streets which would operate at LOS C.

Parking The parking analysis in this EIR was performed in terms of the areas adjacent to the SOM rezoning area as well as the SOM rezoning area itself, since utilization of parking supply in the SOM is not limited to SOM-bound travel. Travelers to surrounding areas such as the C-3 district and Showplace Square also use this space. This is particularly true of long-term parking demand as commuters to the more congested C-3 district, for example, take advantage of less expensive parking in the SOM. Surveys of existing parking resources indicate that the current parking demand in the area examined for both on and off-street is at approximately 91% of capacity. This is forecast to increase to approximately 97% of capacity in 2000, an essentially full condition. Parking demand within the SOM Plan area and C-3 District is estimated to exceed supply in 2000 at 103% and 105% of capacity, respectively. This excess demand for parking would result in increased difficulty for vehicular travelers to the SOM, downtown and nearby areas in finding convenient parking, and would be likely to result in increases in parking rates. This may contribute to

changes in modal choices away from drive alone and towards ridesharing and transit.

Air Quality:

Air quality impacts associated with development forecast for the SOM in 2000 would be generated primarily from increased vehicle emissions. To a lesser extent, building operation of new projects would contribute emissions through the combustion of natural gas for space heating and electricity generation to meet operational demands. The California biennial inspection and maintenance program (I/M) and improved emission factors for new motor vehicles are expected to counterbalance total projected increases in emissions related to both increasing vehicle travel and demands of building operation for newly constructed space. Development in the SOM would not conflict with pollution reduction strategies recommended by the 1982 Bay Area Air Quality Plan.

Total hydrocarbon (HC) and carbon monoxide (CO) emissions associated with SOM vehicle travel and building operation are projected to be less in 2000 than currently. SOM and cumulative development are not expected to increase ozone concentrations. Emissions of sulfur oxides (SO_x) are not expected to violate standards in the Bay Area. Evaluation of representative intersections in the SOM show no violations of eight or one hour Carbon Monoxide (CO) concentrations.

Although it is not possible for a program EIR to make accurate projections of TSP concentrations violations of standards due to demolition and construction activities. Demolition, excavation, and construction of new buildings in the SOM area would generate total suspended particulate (TSP) emissions and would probably cause violations of the state 24-hour TSP standard in the immediate vicinity of construction sites.

Geology and Seismicity

Approximately two-thirds of the rezoning area is located on landfill, and therefore subject to a variety of earthquake-induced hazards: violent groundshaking, liquefaction, subsidence and tsunami. Development and increased employment in the area under the proposed plan could expose additional individuals to these hazards. The number of employees per acre (epa) is projected to increase in the study area from 51 epa to 68 epa in 2000. New construction and major building rehabilitation in the area would be subject to current, more stringent building codes and would result in safer structures. In addition, governmental actions have been undertaken, independent of the proposed rezoning, which will reduce earthquake hazards in the area. A comprehensive inventory of seismically unsound buildings has been completed, as a preparatory step to formulating recommendations for legislation requiring seismic upgrading of these structures. This legislation is being developed under the aegis of the Chief Administrative Officer's office, which has been conducting meetings of subcommittees consisting of public and private sector professionals and laypersons who are examining the technical, financial and socioeconomic implications of a retrofit program, in order to determine appropriate standards and language for the legislation. A parapet removal ordinance is currently being implemented through the Department of Public Works (DPW).

The implementing zoning controls accompanying the proposed SOM Plan contain conservation elements such as reduced FAR, and limitations on the location of office space, which may discourage conversions or new construction that might otherwise occur under existing controls. This may encourage the retention of older and more hazardous structures with concomitant dangers to building occupants and visitors. Conversely, to the extent these same preservation elements reduce the overall intensity of activity in the area relative to existing controls, the project would reduce the numbers of people exposed to potential seismic hazards at any given time, and may encourage adaptive reuse and structural rehabilitation of the existing building stock.

Energy

Annual energy demand for total development in the project area in 2000 would be as follows: 294 million kWh of electricity; 830 million cubic feet of natural gas, for a total of 3.9 trillion Btu. This represents a decrease of from current levels.

Transportation related energy demand for SOM-generated travel would be less than 1.7 trillion BTU/yr, also a decrease from current levels. This overall decrease in energy consumption as the result of two principal factors: first increased energy efficiency of new buildings and the overall building stock over time; and second, a relative decrease in automobile travel as a share of SOM travel, particularly in the drive alone mode, in favor of more energy efficient transit travel.

E. MITIGATION MEASURES

Based on the analysis contained in the Impacts section of the EIR, the SOM rezoning would have the following significant environmental impacts: contribution to cumulative transportation impacts; increased exposure of individuals to seismic hazards; and increased violations of established air quality standards for Total Suspended Particulates (TSP). It should be noted that the rezoning is mitigative in intent. The controls have been proposed for the purpose of maintaining the existing mix of land uses in the area. Therefore, the controls would reduce the SOM area's contribution to existing adverse cumulative transportation conditions and to minimize physical change in the area relative to the existing, less restrictive zoning controls applicable to the SOM.

Section IV, Mitigation Measures, page 182 of this EIR presents a series of measures designed to reduce or alleviate potential physical environmental impacts of the proposed plan. These are listed by topic and by three

categories: measures included in the Plan and implemented through its ordinance; measures implemented by existing ordinances, and measures under consideration. Measures under consideration are further subdivided into two categories: those recommended in the Plan but requiring a separate implementation effort and those which could be implemented on a site-specific basis by public agencies.

Mitigation measures that would be implemented by the Plan include but are not limited to:

- A general reduction in commercial FAR;
- Limitations on the location and density of office space;
- Open space requirements for commercial uses;
- Height limitation on project approvals for buildings which cause adverse wind acceleration in specified areas;
- Requirement for transportation brokerage services for new office space in excess of 100,000 square feet

F. ALTERNATIVES

This EIR examines four alternatives in addition to the proposed South of Market Plan.

ALTERNATIVE 1: NO PROJECT - EXISTING ZONING SCENARIO

This would be represented by a future development scenario which would be expected under present zoning controls, see Figure 7, page 51 for existing permanent zoning designations. For purposes of illustrating the impacts of the SOM Plan, future conditions expected under the SOM Plan and under the existing zoning scenario are contrasted in selected instances in the EIR text.

In summary, under Alternative 1 the SOM residential districts would remain very small; the C-3-S district would remain, allowing housing only as a

conditional use. The rest of the SOM Plan area, excluding the residential enclaves and the South Park district, is zoned M-1 and M-2 and also only allows housing as a conditional use. Office would be permitted in all non-residential districts of the SOM.

This alternative would result in a greater employment increase in the area. The SOM's contribution to cumulative transportation and air quality and energy impacts would be correspondingly greater. Existing non-office uses would be displaced by office uses expanding from the downtown to a greater extent than would occur under the SOM rezoning. Architecturally significant buildings would be more likely to be altered or demolished due to increased development pressure from office uses. There would be a greater working population in the area subject to potential seismic hazards, although there could be an increase in seismic rehabilitation of buildings as a result of a greater number of conversions of non-office space to office use. There would be no requirement for new commercial development to provide open space. This would increase the relative shortage of open space in the area by increasing daytime population with no corresponding increase in open space.

ALTERNATIVE 2: NO SERVICE/SECONDARY OFFICE DISTRICT

This alternative would modify the SOM Plan by eliminating the Service/Secondary Office (SSO) districts thereby not permitting new office uses in the SOM. The SSO districts would be replaced by an extension of the SLI district. The prohibition on office space would moderate the rate of rent increase for non-office uses in the SOM, thereby preserving the SOM as a location option for some lower-rent paying uses which might otherwise be displaced by offices. Generally, existing non-office business would be more likely to remain or expand in the SOM area.

This alternative would result in less employment growth than under the SOM Plan or the existing zoning scenario with a corresponding reduction in environmental impacts associated with increased employee population and building space. This would include: reduced transportation, air quality and

I. SUMMARY

energy impacts; less exposure of individuals to seismic impacts; and reduced incentive for relocation of existing business or demolition a substantial alteration of architecturally significant buildings.

The reduction in employment growth and new office use in the SOM that would be expected under Alternative 2, relative to the SOM Plan or under existing zoning, would be expected to shift to surrounding areas. Therefore, the net reduction in Citywide employment and office growth would be less than the differences in employment that would occur within the SOM under this alternative relative to the SOM Plan or the existing zoning scenario. Lower-rent paying office uses would seek space in adjacent areas such as the Rincon Point, South Beach, Yerba Buena Center (YBC) Redevelopment Areas, Rincon Hill areas, and in the future, Mission Bay. Office rents in these areas would be expected to increase faster than they otherwise would and new office space would be absorbed more quickly.

ALTERNATIVE 3: MORE HOUSING.

This alternative would be represented by an RC-4 (Residential-Commercial Combined, High Density) district with an 80 foot height limit and a 1.0 to 1 commercial FAR limit for the SOM area north of Harrison Street. The area south of Harrison would be designated an SLI district, except for South Park, which would remain an RC-2 district. As with Alternative 2, this alternative would prohibit new office space throughout the SOM. The impacts of this Alternative would be similar to Alternative 2. Employment growth in the area would be slower than under the SOM Plan or existing zoning. Transportation and air quality and energy impacts would be reduced relative to the SOM Plan. Fewer people would be exposed to seismic hazards.

Existing non-office businesses would be more likely to remain or expand in the area. Buildings of architectural consequence would be less likely to be demolished a altered due to reduced pressure for development.

It is not expected that there would be a substantial amount of new housing constructed in the SOM under this Alternative within the forecast period. Surrounding residential areas such as Rincon Hill, Rincon Point/South Beach and YBC are perceived as more desirable residential location with greater availability of potential housing development sites. Over the longer term it is expected that there would be a relative increase in housing in the area. This could serve to reduce transportation and associated air quality impacts by locating employees nearer to job sites.

As with Alternative 2, there would be spillover impacts on surrounding areas from this alternative. Part of the employment growth that would have otherwise taken place in the SOM under the SOM Plan or current zoning, but which would not occur under Alternative 3, would be expected to occur in surrounding areas, particularly in office activities. Office rents in these areas would be expected to increase faster than they otherwise would and new office space would be absorbed more quickly.

ALTERNATIVE 4: NO CHANGE - EXISTING PHYSICAL CONDITIONS.

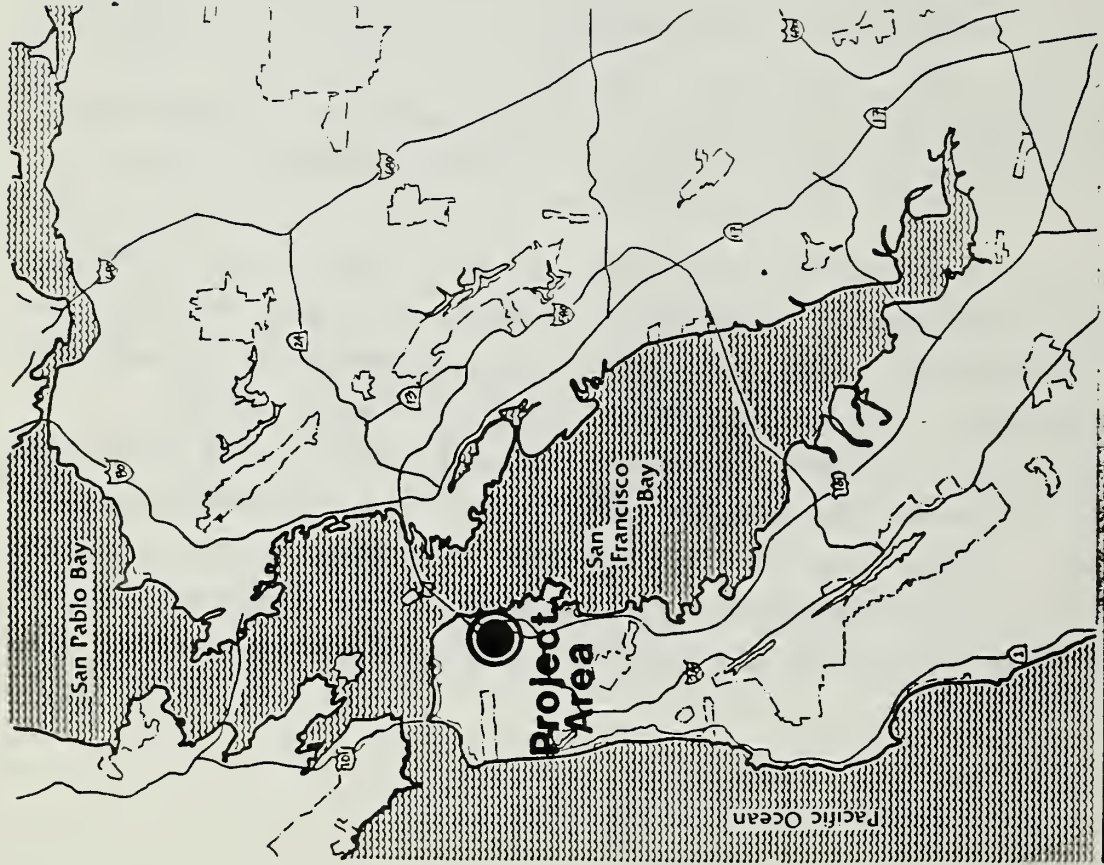
This alternative assumes no changes would occur in the existing physical environment in the SOM area over the 15 year forecast period. The SOM area would remain as described in the Setting sections.

II. PROJECT DESCRIPTION

A. INTRODUCTION

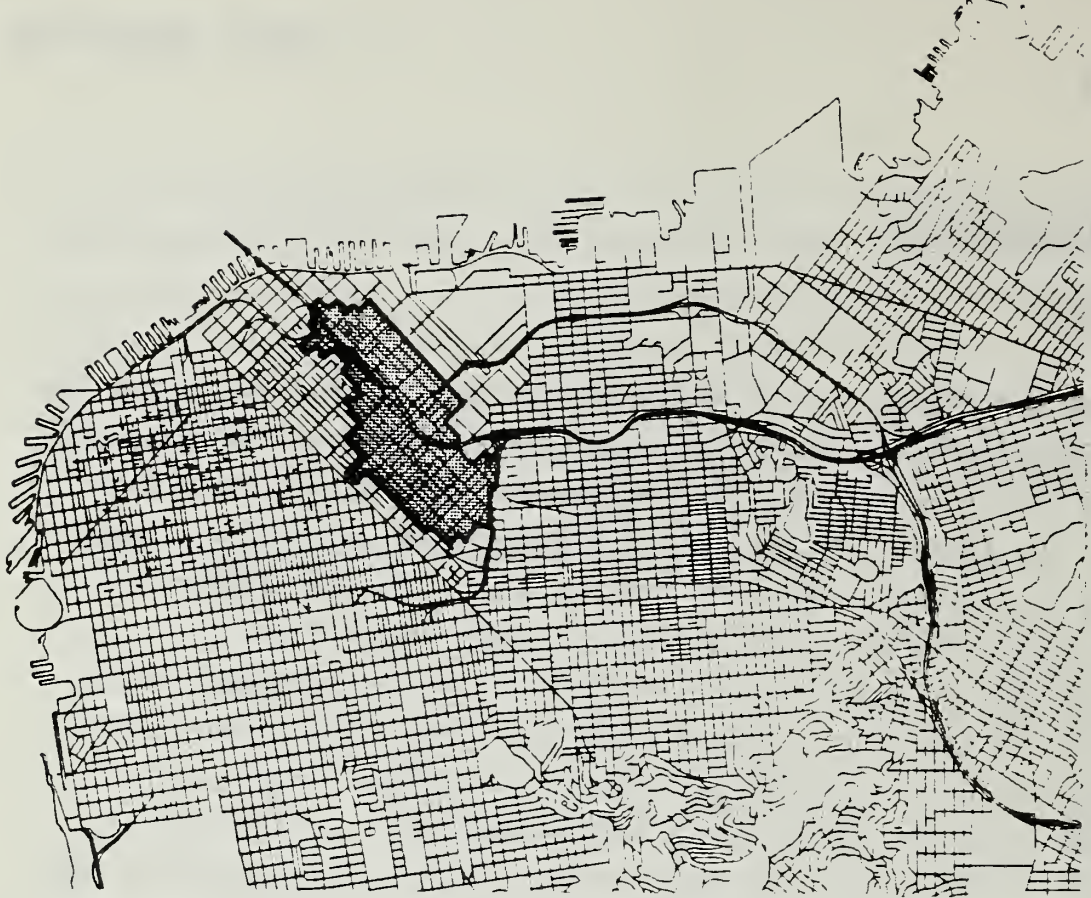
The proposed project consists of amendments to the San Francisco Master Plan and implementation of the new Master Plan Objectives and Policies through revisions to the City Planning Code and Zoning Maps. The proposal is detailed in the South of Market Plan, Proposal for Adoption, June, 1988, hereafter known as the "project" or the SOM Plan. The area addressed in the SOM Plan is generally bounded by Mission, Second, Townsend and Division/Thirteenth Streets. The SOM Plan would apply to those sections of the SOM that are not already addressed in the Downtown Plan, Rincon Hill Plan, Rincon Point-South Beach Redevelopment Plan, Yerba Buena Center Redevelopment Plan, and the proposed Mission Bay Plan, or that will be addressed in future planning efforts for the Showplace Square and the South Van Ness areas. The project would encompass all of Assessor's Block(s) and Lot(s): 3516 through 3525, 3528, 3726 through 3732, 3753 through 3762, 3775 through 3779, 3784 through 3788, and portions of Assessor's Block 3509, 3510, 3511, 3703, 3704, 3725, 3726, 3733, 3749, 3750, 3752, 3763, 3764, 3774, 3780, and 3789. The location of the project in a regional context is shown in Figure 1. The project's specific location is shown in Figure 2.

The SOM Plan was prepared by the Department of City Planning and is intended to guide future development in the South of Market (SOM) area into the next century. The SOM area is the location of a unique combination of land uses in close proximity to the downtown area. These uses include light industrial, artisan, and home and business services, which occupy lower-rent space than space within the downtown core, as well as a considerable amount of affordable housing resources. The SOM Plan is proposed for the purpose of protecting these uses from potential displacement by the expansion of downtown offices and related uses capable of paying higher rents for .



SOUTH OF MARKET PLAN

Figure 1 REGIONAL LOCATION MAP



SOUTH OF MARKET PLAN

Figure 2 SITE LOCATION MAP



comparable space. It would allow continued business opportunities for lower-cost secondary and professional office space along the Second and Townsend Streets areas.

B. BACKGROUND

The objectives and policies of the proposed South of Market Plan and its implementing measures culminate an extensive data collection and analysis effort by the Department of City Planning of land use issues in the SOM. The Plan responds to a directive from the Board of Supervisors in December 1983, when it adopted an interim ordinance establishing the South of Market Industrial and Housing Conservation Special Use District (Industrial/Housing SUD). The Industrial/Housing SUD became the first of a number of interim zoning measures which were refined as planning for the SOM area progressed. The ordinance was proposed in response to concerns that office development pressure from downtown office growth to the north could cause potential adverse effects on the SOM area, by generating an undesirable intensification of land use activity and displacement of existing businesses and residents. This interim zoning control, which was imposed for 18 months, included strict controls on office development. Office space was limited to a 2.0 to 1 Floor Area Ratio (FAR), and parking for office space was required at the ratio of one parking space per 250 sq. ft. of occupied floor area, at least twice the requirement applied to offices located outside the Industrial/Housing SUD. The area contained in the interim Industrial/Housing SUD included a strip north of Folsom Street (generally bounded by Minna, 4th, Folsom and 12th Streets) that was zoned for downtown support services (C-3-S), which permitted new office uses.

During the interim period, the Department of City Planning produced a new area plan and zoning controls for the downtown area, the Downtown Plan, which was adopted in 1984. The Downtown Plan included all areas with an underlying permanent C-3 zoning. The new permanent zoning controls reduced FAR to 2.0 to 1 for office uses in that portion of the Industrial/Housing SUD with an

underlying C-3-S zoning, consistent with the interim controls.

It was also during this period that the Department began its analysis and held a series of public meetings in the SOM community in order to develop the objectives and policies of the SOM Plan. That effort culminated in publication of the South of Market Plan, Proposal for Citizen Review, in June 1985, covering a larger area than that contained in the Industrial/Housing SUD. It was expanded to include land to the east of the SUD (and exclude smaller areas located in the northeast and southwesternmost portion of the SUD) based on conclusions of the Department's planning studies and concerns expressed by the community. Preparation of this EIR then commenced, based on the objectives, policies and land use controls contained in the Proposal for Citizen Review.

Following publication of the Proposal for Citizen Review, additional public meetings and hearings were held resulting in further modifications in response to the comments on the policies contained therein. Those modified measures were incorporated into new interim zoning controls adopted On October 2, 1986 by the City Planning Commission for an eighteen month period. These interim controls were adopted in order to allow the completion of environmental and legislative review necessary for adoption of new permanent controls. The interim controls were subsequently extended for a six month period and are effective until October 2, 1988.

The Department has published the South of Market Plan, Proposal for Adoption, June 1988, accompanied by proposed permanent zoning controls entitled South of Market Zoning Controls - Proposal for Adoption, July 1988. The project as described below is based on the proposals contained in those documents. Further public review and comment on the proposal will be solicited prior to adoption of the permanent controls.

The controls as currently proposed in the Proposal for Adoption differ somewhat from the controls on which the EIR impact analyses were based. The

impacts analyses (and underlying employment and land use forecasts) were based on controls which were essentially the same as the interim controls adopted in October of 1986 and discussed in the Initial Study. These controls were based principally on the South of Market Plan, Proposal for Citizen Review, modified by deletion of the Nighttime Entertainment Districts originally proposed for Folsom, Howard, Ninth and Eleventh Streets./1/ The current controls further modified the Proposal for Citizen Review by reducing the area zoned for Service Secondary Office (SSO). Since the EIR impacts analyses are derived primarily from employment and land use forecasts that are based in the main on the Proposal for Citizen Review, the modifications embodied in the Proposal for Adoption are not reflected directly in the impact analyses.

The differences between the controls on which the forecasts were based and the controls as currently proposed are discussed in the Introduction to the Setting and Impacts Chapter page 42. As explained in that Introduction, it is not expected that the changes made to the SOM Plan/rezoning since the forecasts were prepared would substantially alter those employment and space forecasts for the SOM for the year 2000. To the extent there would be differences, the current controls in the Proposal for Adoption would be likely to result in slightly lower employment growth and a corresponding lessening in associated environmental impacts. Therefore, the impacts analysis presented in this EIR may be slightly overstated, presenting a conservative, or worst-case analysis for environmental review purposes.

C. PLANNING PROCESS/REQUIRED APPROVALS

The SOM Plan is proposed as a special area plan for adoption as part of the Master Plan. The Plan would provide guidelines for future development in the SOM. Its objectives and policies address land use, transportation, open space urban design and neighborhood livability issues unique to the South of Market Area. They would supplement the more general policies on these topics in existing elements of the Master Plan. The SOM Plan will be subject to a

series of public hearings before the City Planning Commission. If adopted by the Commission, the Master Plan would be amended to include the SOM special area plan as city policy. As necessary, portions of existing Master Plan elements would also be amended where they would be changed or superseded by objectives and policies of the SOM Plan.

Certification of the EIR by the City Planning Commission would precede any discretionary actions by public agencies concerning the proposed Master Plan amendments and Planning Code and Zoning Map changes. Implementation of the proposed Plan would be achieved through amendments to the City Planning Code and Zoning maps, both of which would require public hearings. While amendments to the Master Plan are approved exclusively by the City Planning Commission, Planning Code and Zoning Map amendments require approval by the City Planning Commission, the Board of Supervisors and the Mayor.

D. PROJECT CHARACTERISTICS

PROPOSED MASTER PLAN POLICIES AND OBJECTIVES

The proposed amendments to the Master Plan are presented in four major topical areas: Residential Space; Business Activity; Transportation; and Neighborhood Livability and are summarized below.

Residential Space

The stated objectives of the Plan with regard to residential space are to: preserve existing rental housing within the SOM; and to encourage the development of new housing affordable for lower income households. Plan policies intended to achieve those goals include: encouraging retention of existing housing; preserving the South Park residential neighborhood; promoting the development of additional housing supply through construction of in-fill housing and residential hotel units and the development of mixed income, mixed use commercial/residential development; and promoting the

preservation and creation of live/work space.

Business Activity

The stated Plan objective regarding business activities is to: protect existing, and facilitate the expansion of, SOM industrial, home and business service, artisan, neighborhood-serving retail and community service activities.

Existing SOM businesses tend to be rent-sensitive industrial and business service uses. Competition for space from higher rent-paying tenants (primarily office) from the adjacent downtown area, could displace these types of businesses. Plan policies designed to preserve and expand SOM business activities include: protecting industrial and service uses by concentrating more lucrative uses in specific subareas of the SOM; provision of sufficient building area to accommodate growth of SOM business activities; permitting existing businesses to remain as non-conforming uses where they would otherwise be forbidden by the proposed zoning; promoting live/work space in mixed use buildings.

Transportation

The objectives of the Plan with regard to transportation are to: develop transit as the primary mode of travel to and from other parts of the city and region; minimize the impact of automobile traffic on the livability of the SOM; increase parking resources for SOM businesses and residents; maintain the availability of rail freight service to SOM rail users, including the Port of San Francisco; and to improve SOM pedestrian circulation, comfort, convenience and safety.

Travel in and through the SOM is inexorably linked to the C-3 district as the primary attractor and generator of travel in the downtown area. Therefore, several of the recommended Plan policies regarding transportation are taken

from the Downtown Plan and referenced as such in the SOM Plan document. These policies are directed towards achieving the City's continuing goal of increased transit usage, higher vehicle occupancies and decreased automobile travel. Policies directed specifically toward the SOM include: expansion of transit service in the SOM to facilitate the linking of the SOM to the downtown and regional transit facilities; constructing new long-term parking garages in the SOM to serve the downtown only to the extent they would replace the loss of long-term parking in the downtown core; providing adequate parking and loading (on and off-street) for existing and new SOM residential and business development; develop a rail service program to assure the accessibility of rail tracks and rail service to SOM rail users; convert abandoned rail rights-of-way to pedestrian ways; restore sidewalks and establish a safe and convenient pedestrian network throughout the SOM; encourage day and nighttime use of existing off-street parking resources; and establishment of a residential preferential parking program.

Neighborhood Livability

Plan objectives with regard to neighborhood livability are: to preserve existing neighborhood amenities; and to improve neighborhood livability in the SOM by providing essential services. The proposed policies in that regard are to: preserve the existing land use mix and density in the area; propose height limits to maintain existing scale and to preserve and maintain view corridors and sun exposure; preserve the architectural character and identity of SOM buildings through the protection of individual buildings of architectural and/or historical merit and areas containing groups of such buildings; encourage the careful location of neighborhood serving community services; encourage neighborhood-serving retail uses throughout the SOM and allow concentration along certain streets where increased pedestrian activity would serve as a crime deterrent; create new parks and recreational facilities and improve existing recreation and open space resources and facilities; improve street and sidewalk maintenance including enforcement of parking regulations, and encourage regular street and sidewalk cleaning,

rodent eradication and trash removal; and encourage the careful location and maintenance of public facilities such as toilets and trash receptacles.

PROPOSED ZONING CONTROLS

In order to implement the policies summarized above, the project proposes to reclassify height, building bulk, and use districts for properties presently classified as RH-2 (House, Two-Family); RH-3 (House, Three Family); RM-2 (Mixed Residential, Moderate Density); RC-2 (Residential-Commercial Combined, Moderate Density); RC-3 (Residential-Commercial Combined, Medium Density); C-3-S (Downtown Support); C-M (Heavy Commercial); M-1 (Light Industrial); M-2 (Heavy Industrial); and P (Public) use districts.

The proposed controls designate eight use districts (see Figure 3): one is a wholly residential district; three are mixed use, residential/commercial districts; two are wholly commercial districts; one is an "overlay" nighttime entertainment district; and one would establish a P (Public) use district.

The wholly residential district is the Residential Enclave District (RED). The three mixed residential/commercial districts are the Residential/Service District (RSD); the South Park District (SPD) and the Service/Light Industrial/Residential District (SLR). The wholly commercial districts are the Service/Light Industrial District (SLI) and the Service/Secondary Office District (SSO). The newly created Nighttime Entertainment District would encompass portions of the SLI and SSO districts.

The proposed controls contain seven new building height/bulk districts (see Figure 4). Three of them, while regulating building height, would not regulate the bulk of newly constructed buildings and are denoted with a bulk designation of "X": 40-X; 50-X; and 80-X (40-foot, 50-foot and 80-foot height limits, respectively). A fourth height/bulk classification, 40-X/85-B, would permit a base 40 foot height with no bulk restrictions; however, between 40 and 85 feet in height, the maximum building length and

diagonal building dimensions would be 110 feet and 125 feet, respectively. Within this 40-X/85-B district, any construction above 40 feet would require conditional use authorization. Conditional use approval for this additional height would require the provision of affordable housing and/or artist live/work space. In addition, the conditional use process would consider criteria set forth in section 263.11 of the City Planning Code, which generally forbid building heights above 40 feet if additional building height would cause adverse wind acceleration at the street level, or adverse sun shading impacts on adjacent open space and nearby publicly accessible open space.

The fifth district, 65-U, requires a 15 foot building setback at the 50 foot height level on street facing building walls. The sixth district, 130-E, would allow a base height of 65 feet with no bulk limits. Between 65 and 130 feet in height, the maximum building length and diagonal dimensions would be 110 feet and 140 feet, respectively. The seventh height district, OS, controls building heights within public park sites in accordance with the objectives, policies and principals of the Master Plan. The existing 80-K district would remain.

South of Market - Areawide Controls

The proposed controls establish a base South of Market district (Section 102.5) which is shown on Sectional Map 3SU of the Zoning Map and contains the individual districts described below. The proposed controls create amend Article 8 within the Planning Code to establish building and use standards for seven of the eight SOM use districts. The P (Public) use district would be governed by the provisions of Sections 234.1 of the Code. Certain components of the proposed zoning controls would apply uniformly throughout all of the SOM base district. The major provisions which would apply throughout the SOM are listed below:

Permitted Uses. All districts would permit arts-related live/work space

SOUTH OF MARKET PLAN

PROPOSED USE DISTRICTS

- NED** Nighttime Entertainment Special Use District
- SLR** Service/Light Industrial/Residential
- SSO** Service/Secondary Office
- RED** Residential Enclave District
- RSD** Residential/Service District
- SLI** Service/Light Industrial
- SPD** South Park District
- P** Public

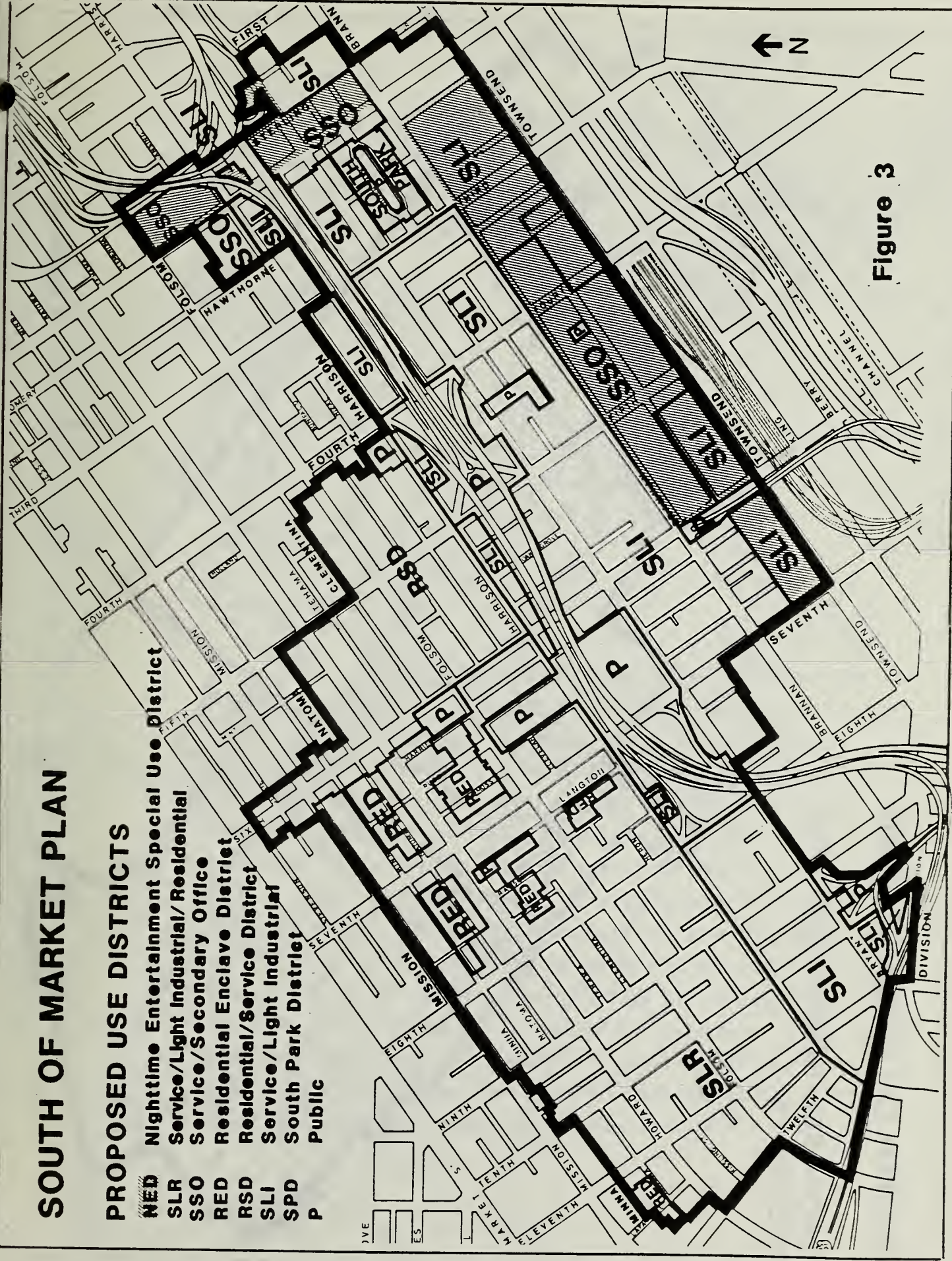


Figure 3

SOUTH OF MARKET PLAN

PROPOSED HEIGHT AND BULK DISTRICTS

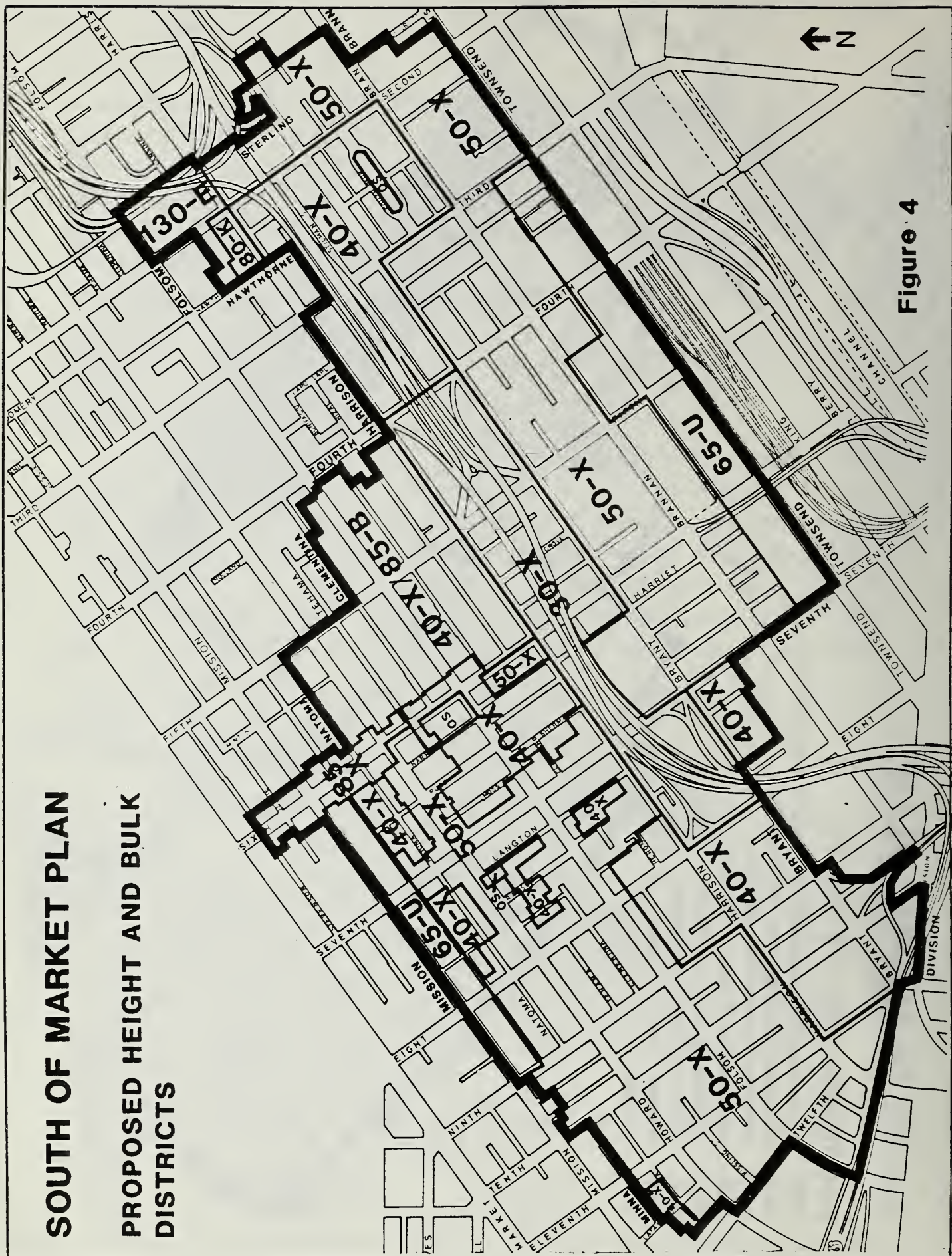


Figure 4

as a principal use. Arts space is defined as space necessary to accommodate the production, performance and/or exhibition of commercial and cultural arts-related activities (exclusive of movie theaters, dance halls, or other similar adult or nighttime entertainment activities).

Rear Yards and Open Space. The project includes different open space standards for residential and commercial development.

Residential Use

A 25% rear yard would be required at the first level of residential use. Open space standards of 36 sq. ft. per unit would be established for live/work units in newly-constructed buildings or additions.

Commercial Use

The proposed controls establish an open space requirement for all commercial and industrial uses, at the following ratios: one sq. ft. of open space per 250 gross sq. ft. (1:250) of general commercial development, which includes retail, personal service, wholesale trade space and institutional and like uses; 1:120 for manufacturing and light industrial space; and 1:90 for new or converted office space. Alternatively, the controls allow payment of an in-lieu fee at the following rates to provide off-site open space resources: \$0.67 per square-foot for general commercial use; \$1.35 per square-foot for manufacturing and light industrial use; and \$1.80 per square-foot for office use (the C-3 district controls currently require a range of 1 square foot of open space per 50-100 square feet of commercial space, excluding retail developments, and \$2 per square foot of net additional office space to be contributed to the Downtown Park fund.)

Parking. Artist and artisan production and performance spaces, and live/work units would have a 1:1200 requirement. Dwellings would be required to provide one space per unit, except in the RSD where the requirement would be one space for each four units; all required parking spaces for dwelling units could be compact car-sized.

Reduction in parking requirements may be sought for the following uses, provided that they are justified by the anticipated auto usage of future residents and visitors: dwelling units; SOM nighttime arts-related, performance or exhibition space; existing live/work units; and group housing (residential hotels) on Sixth Street. Modification of parking requirements would be permitted through an administrative review process described below.

Alternatively, the proposed controls allow payment of a one-time fee in-lieu of providing required off-street parking for non-residential development of \$15,000 per required parking space. The in-lieu fee would be administered by the San Francisco Parking Authority to construct public parking facilities within the SOM.

Administrative Review. Modifications to parking, rear yard, and open space standards, as described above, could be granted by the Zoning Administrator through an administrative review process established by Section 307(g) of the proposed controls, which provides procedures for initiation, notice and appeal.

Floor Area Ratio (FAR). The proposed project exempts certain types of building area in the SOM from the calculation of gross floor area (which therefore would not count towards the FAR limit): residential space; floor area devoted to childcare cultural, educational or social service facilities; and floor area devoted to live/work units when such floor area exceeds the basic FAR limit, provided the units remain in live/work occupancy and are never converted to wholly commercial use.

Street Trees. The proposed controls would require installation of street trees within the sidewalk space for all new construction or major rehabilitation or conversions of use of buildings within the SOM districts.

Wind and Shadow. The controls would require that new buildings and additions to existing buildings greater than 40 feet in height within the 40X-85B height district, or exceeding 50 feet within the RSD, SLR, SLI or SSO districts, be designed so as to reduce substantial shadow impacts on public plazas and publicly accessible open space. New construction or additions above 40 feet within the 40X-85B district would not be permitted if they generate adverse increases in ground-level wind speeds, defined as 11 m.p.h. in pedestrian areas and 7 m.p.h. in public seating areas.

Screening of Rooftop Structures. Provisions for screening rooftop mechanical equipment would be required in such a way as to integrate such fixtures into the overall building design.

Nonconforming Uses. Nonconforming uses may not be changed to an office, bar, restaurant, nighttime entertainment, hotel, motel, inn, hostel, or movie theater use in any district where the use in question is not permitted. (See description of individual districts below.)

Landmarks. Any use permitted as a principal or conditional use in the SSO district, except nighttime entertainment, may be permitted as a conditional use, if it is determined that allowing the use is essential to the feasibility of preserving the landmark (Section 905.3).

Conversion or Demolition of Dwelling Units. Demolition of a dwelling unit, or conversion of a dwelling to any other use, in any SOM district would require conditional use authorization (Section 905.2).

Bars and Restaurants. Bars and restaurants shall be required to provide adequate off-street parking, provide adequate storage and disposal of garbage; insure that the quiet safety and cleanliness of the premises and its adjacent area are maintained, and insure that noise and odors are not a nuisance to neighbors.

PROPOSED SOUTH OF MARKET USE DISTRICTS

The proposed zoning controls would amend Article 8 of the City Planning Code to establish land use standards for seven of the eight SOM use districts. The P districts would be subject to Section 234.1 of the Planning Code.

Residential Enclave Districts (RED) - Major Provisions

The base RED classification is defined in Section 813 of the proposed permanent controls. The Code describes the RED district as follows:

South of Market Residential Enclave Districts encompass the clusters of low-scale, medium density, predominantly residential neighborhoods located along the narrow side streets of the South of Market SLR district. Within these predominantly residential enclaves lie a number of vacant parcels, parking lots and other properties in open storage use. These properties are undeveloped or underdeveloped and are viewed as opportunity sites for new, moderate-income in-fill housing.

Properties in the proposed RED districts of the SOM would be subject to the provisions described below:

- o A dwelling unit density limit of one unit per 400 square feet of lot area (1:400);
- o A 40 foot height limit;
- o Office, hotels, motels, hostels, inns, nighttime entertainment, or movie theaters would not be permitted within non-conforming use structures;
- o Existing non-residential use structures would become non-conforming use structures subject to the provisions of Sections 182 through 186 of the City Planning Code.

Residential/Service Districts (RSD) - Major Provisions

The base RSD classification is defined in Section 814 of the proposed controls. The RSD districts are described as follows:

The Residential/Service District serves as a major housing opportunity area within the South of Market Base District. The district controls facilitate the development of high density, mid-rise housing, including residential hotels, while encouraging the expansion of existing retail, business service, light industrial, and arts activities. The RSD district serves as a buffer between the higher density, predominantly commercial area of Yerba Buena Center to the east and the low scale, predominantly service and industrial area west of Sixth Street.

Properties in the RSD districts would be subject to the provisions listed briefly below:

- o Dwellings would be permitted at a density of 1:200;
- o 40, 85 or 40/85 foot height limits. The 40/85 district would establish a 40 foot base height limit, with conditional use opportunities to build up to 85 feet for construction of affordable dwellings or live/work units;
- o Retail, general commercial, personal, home and business service, light industrial, institutional and arts activities would be permitted as principal uses;
- o Any use permitted in the SLR district would be permitted.
- o A 1.8 to 1 commercial/industrial FAR;
- o Offices, hotels, motels, hostels, nighttime entertainment, or movie theaters would not be permitted.

South Park District (SPD) - Major Provisions

The SPD classification is defined in Sections 815 of the proposed controls. Section 815 describes the South Park district as follows:

South Park is an attractive affordable mixed use neighborhood. The South Park District is intended to preserve the scale, density and mix of commercial and residential activities within this unique neighborhood. The district is characterized by small scale, continuous-frontage warehouse, retail and residential structures built in a ring around an oval-shaped, grassy park. The existing structures should remain and the mix of uses should continue while in-fill development should contribute positively to the neighborhood scale and use mix.

Properties in the South Park area would be subject to the following provisions:

- o Dwellings would be permitted at a density of 1:600;
- o A 40 foot height limit;
- o SLR uses would be permitted within the district and, in addition, office use would be a principal permitted use.
- o A 1.8 to 1 commercial/industrial FAR.

Service/Light Industrial/Residential (SLR) District - Major Provisions

The SLR district is defined in Section 816 of the proposed controls. Section 816 of the proposed controls describes the SLR district as follows:

The Service/Light Industrial/Residential District (SLR) is designed to maintain and facilitate the growth and expansion of small scale light industrial, home and business service, wholesale distribution, arts-related production and performance/exhibition activities, live/work use, general commercial and neighborhood-serving retail and personal service activities while protecting existing housing and encouraging the development of housing and live/work space at a scale and density compatible with the existing neighborhood.

Properties in the SLR district would be subject to the following provisions:

- o 40 to 65 foot height limits, with most properties within a 50 foot height district;
- o Dwellings would be permitted at a density of 1:200;
- o Retail, general commercial, home, personal and business services, light industrial, institutional, cultural arts and artisan, parking and residential activities would be permitted as principal uses;
- o A commercial/industrial FAR of 2.5 to 1;
- o Office use, hotels, motels, hostels, inns, movie theaters, and adult or nighttime entertainment activities would not be permitted;
- o Office use accessory to permitted commercial uses would be allowed;
- o Existing nighttime entertainment uses may be enlarged through conditional use authorization, subject to specified "good neighbor" conditions pursuant to Section 803.6

Service/Light Industrial (SLI) District - Major Provisions

The SLI district is defined in Section 914 of the proposed controls. Section 914 describes the SLI district as follows:

Service/Light Industrial District (SLI). This district is designed to protect and facilitate the expansion of existing general commercial, light manufacturing, home and business service, live/work use, arts-related uses and other light industrial activities and, while protecting existing dwelling units, would prohibit the development of new dwelling units.

Properties in the SLI district would be subject to the same provisions as the SLR district, with the exception that residential use would not be permitted and height limits would range from 30 to 50 feet. Existing dwelling units may remain as non-conforming uses without a termination date. Conversions of dwelling units to non-residential use would require conditional use authorization.

Service/Secondary Office (SSO) District - Major Provisions

The SSO district is defined in Section 817 of the proposed controls. Section 817 describes the SSO district as follows:

This district is designed to accommodate small scale light industrial, home and business service, arts-related uses, live/work units and present and anticipated demand for small scale, low-cost professional office space and low-cost, large-floor-plate "back office" space and, while protecting existing dwelling units, would prohibit the development of new dwelling units.

Properties in the SSO district would be subject to the same provisions as the SLR with the following exceptions:

- o Building height limits would range from 40 to 130 feet;
- o Office use would be a principal permitted use;
- o Properties within the 65, 80 or 130 foot height districts would be permitted a commercial FAR of 4:1; the commercial FAR for properties

- within the 40 or 50 foot height district would be 3.0:1;
- o Parking for workspace for architects and engineers would be required at the rate of one space per 1000 sq. ft. of floor area (1:1000); other business offices would have a 1:750 requirement;
- o New residential construction would not be permitted, existing dwellings may remain without a termination date.

Nighttime Entertainment (NED) Special Use District

The proposed controls would establish an NED overlay use district.

Properties within this district would be subject to the base district (SLI or SSO) zoning controls. In addition, nighttime entertainment activities such as nightclubs and discotheques would be principal permitted uses, subject to additional conditions, "good neighbor" policies, of proposed Section 803.6

The controls would allow properties elsewhere in the South of Market districts which are currently in such uses to remain on the premises as non-conforming uses without a termination date and further, would allow the expansion and intensification of such activities with conditional use authorization (Section 181(f)).

Public (P) Districts

The SOM P districts encompass properties in local, state or federal public ownership and are subject to the zoning standards described in Section 234.1 of the City Planning Code.

NOTES - Project Description

- /1/ The interim controls for the SOM, adopted in October 1986, differed from the controls proposed in the South of Market Plan Proposal for Citizen's Review, June 1985, in two principal ways. In addition to the deletion of most of the proposed Nighttime Entertainment Districts as discussed in the text, the residential zoning districts were given different designations. Within the June 1985 SOM Plan, new residential district designations had been proposed: the Residential Hotel District (RHD) and the Residential Enclave District (RED), which incorporated proposed zoning controls unique to these districts. The interim

II. PROJECT DESCRIPTION

controls utilized existing residential zoning district designations with Special Use District (SUD) "overlays" to implement these same controls. Thus, the zoning controls applicable to these residential districts were the same under the June 1985 Plan and under interim controls, although the names of these districts differed.

INTRODUCTION

III. ENVIRONMENTAL SETTING AND IMPACTS

INTRODUCTION

An Initial Study of the proposed project was published on July 24, 1987 and a determination was made that an Environmental Impact Report (EIR) was required. Issues that were considered to have no significant effect include: Urban Design and Visual Quality; Noise; Utilities and Public Services but for police, fire and sewer service; Biology; Water; Hazards; and Cultural Resources. The Initial Study is incorporated herein as Appendix A, page A-1, and may be referred to for a discussion of these issues.

Not all of the impacts discussed in this section are physical environmental effects as defined by the California Environmental Quality Act (CEQA). Other impacts are included for informational purposes only.

Modifications to the SOM Plan

The environmental setting and analyses of future impacts presented in this section derive primarily from estimates of current (1985), and forecasts of future (2000), employment and space use in the SOM. These estimates and forecasts were completed in May and September of 1986, respectively, and based on zoning controls proposed for the SOM at that time. Those controls were essentially the same as the interim controls which were adopted by the Planning Commission on October 2, 1986.

Subsequent to completing the necessary environmental impact analyses but prior to publishing this Draft EIR, the proposed controls were slightly modified. The SOM controls as currently proposed are those described in the Project Description Chapter above, page 21. In large part, the changes to the proposed SOM controls were made for purposes of organization and/or clarification in language rather than substantive changes in policy, although

III. ENVIRONMENTAL SETTING AND IMPACTS

INTRODUCTION

there are some zoning control revisions that would generate slightly fewer impacts than are evaluated in the EIR.

Notable organizational changes in the proposed controls include:

- Creation of an Article 9 in the City Planning Code, similar to the Article 7 format used for the Neighborhood Commercial Rezoning, which provides tables for easier reference regarding permitted uses and other zoning controls for each of the proposed subarea districts in the SOM Plan;
- Discrete names for residential use districts in the SOM Plan: the Residential Enclave District (RED) and the Residential/Service District (RSD). These districts have unique controls relative to other R districts in the Code, and are therefore proposed as discrete use districts;

The most substantive change in the proposed zoning controls is the reduction in the size of the SSO district. Consequently, new office uses would be allowed in less of the SOM than has been assumed in the EIR analyses. This current proposal also provides that all uses permitted in the SSO district, excluding nighttime entertainment but including office space, would be allowed if permitting the use is deemed necessary to preserve a landmark building.

These changes would be likely to result in marginally lower rates of employment growth in the area through the forecast period than those presented and analyzed in the following chapters, principally because of the additional limitations on office use. Therefore, the forecast increases in employment and building space analyzed in the Initial Study and this EIR are likely to overstate the actual increases that will occur in the area by 2000. To some extent this employment growth forecast in this EIR would occur sometime beyond the forecast year of 2000. Consequently, the impacts analysis in this EIR provides a conservative or worst-case analysis of year 2000 impacts. However,

III. ENVIRONMENTAL SETTING AND IMPACTS

INTRODUCTION

for reasons that are explained in detail in the Land Use Section page 49 below, these modifications are not expected to result in a substantial change in the impacts of the Plan as now proposed, either quantitatively or qualitatively, from the controls used as the basis for the forecasts.

Methodology

The methodology for estimating and forecasting existing and future employment and space use analyzed in this EIR is consistent with that used in the Downtown Plan EIR (EE81.3) and explained in Vol. 2 of that document, Appendices, pages F.1-F.2, G.1-G.59, H.1-H.32 and in Appendix B of this document. The analysis in this EIR builds upon the data and methodology of the Downtown Plan EIR, and updates and expands that analysis.

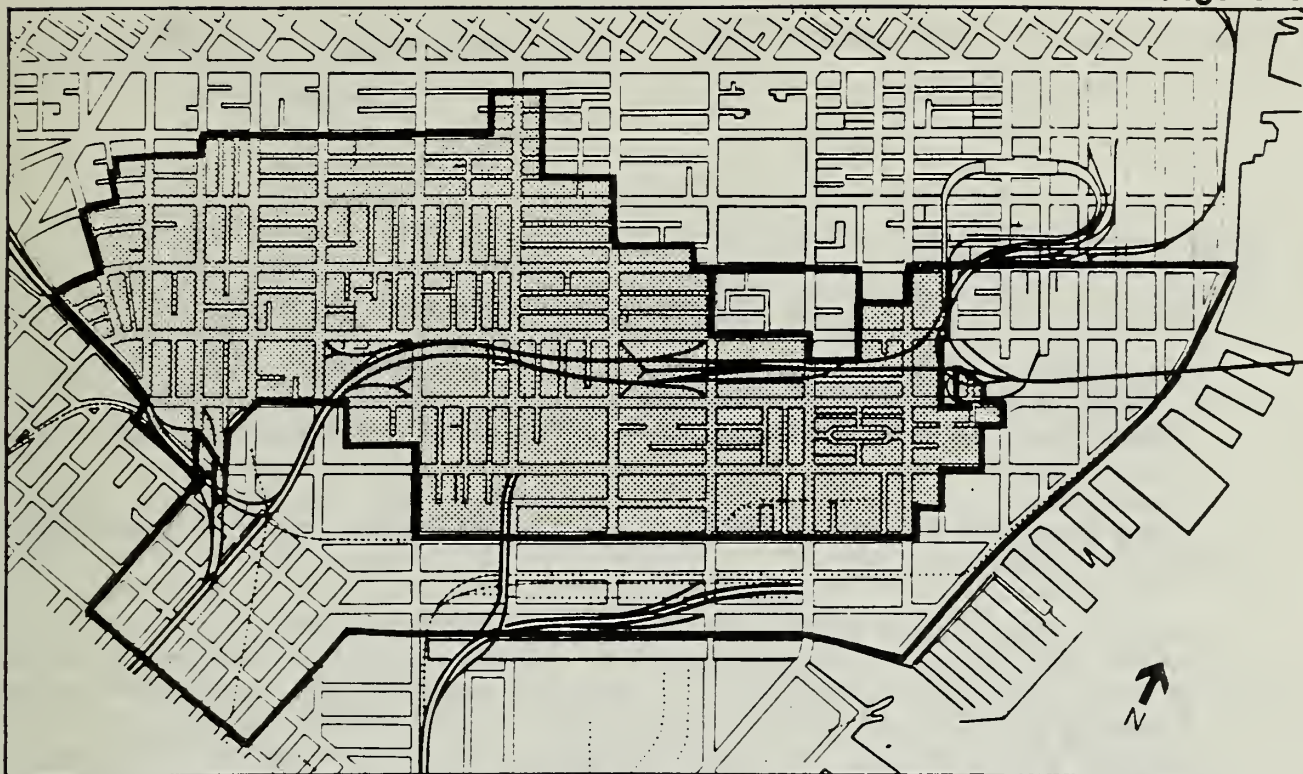
In summary, detailed estimates of current employment and building space and forecasts of future employment and space were developed for the SOM Plan area. The setting (1985) information and economic forecasts are derived from a number of sources including land use inventories, and employer and employee surveys covering the SOM and nearby areas; existing published employment data; and prior planning and environmental studies prepared by the Department./1/ The analysis in this EIR used these data to develop detailed employment and space use estimates for the SOM for 1985 and to forecast changes in employment and space to the year 2000.

In order to evaluate potential impacts associated with the proposed SOM rezoning in a broader context that includes economic activity from the downtown, detailed estimates of existing and future space use and employment were also prepared for the entire area subject to the employer/employee surveys administered by the Department of City Planning in 1981/1982. This includes the C-3 districts, and an area which was labelled for purposes of the survey as the South of Market/Folsom (SOM/F). The SOM/F area is broader than, but encompasses, the rezoning area (See Figure 5)./2/ Where discussed, the combined C-3 and SOM/F area is referred to simply as the "survey area" (see Figure 6).

INTRODUCTION

The setting and forecast estimates contained in this EIR were based on information which was not available prior to certification of the Downtown Plan EIR, and which update C-3 employment and space setting estimates and forecasts presented in that document./3/ Recent employment data indicates that actual 1985 C-3 district employment was lower than the setting estimates for the C-3 district in the Downtown Plan EIR. Forecasts of employment growth to 2000 for the C-3 district are also lower than the Downtown Plan EIR forecasts, reflecting updated economic analysis of recent trends in employment and growth potential for downtown business sectors./4/ (See Appendix B for further discussion of employment estimates.)

Figure 5

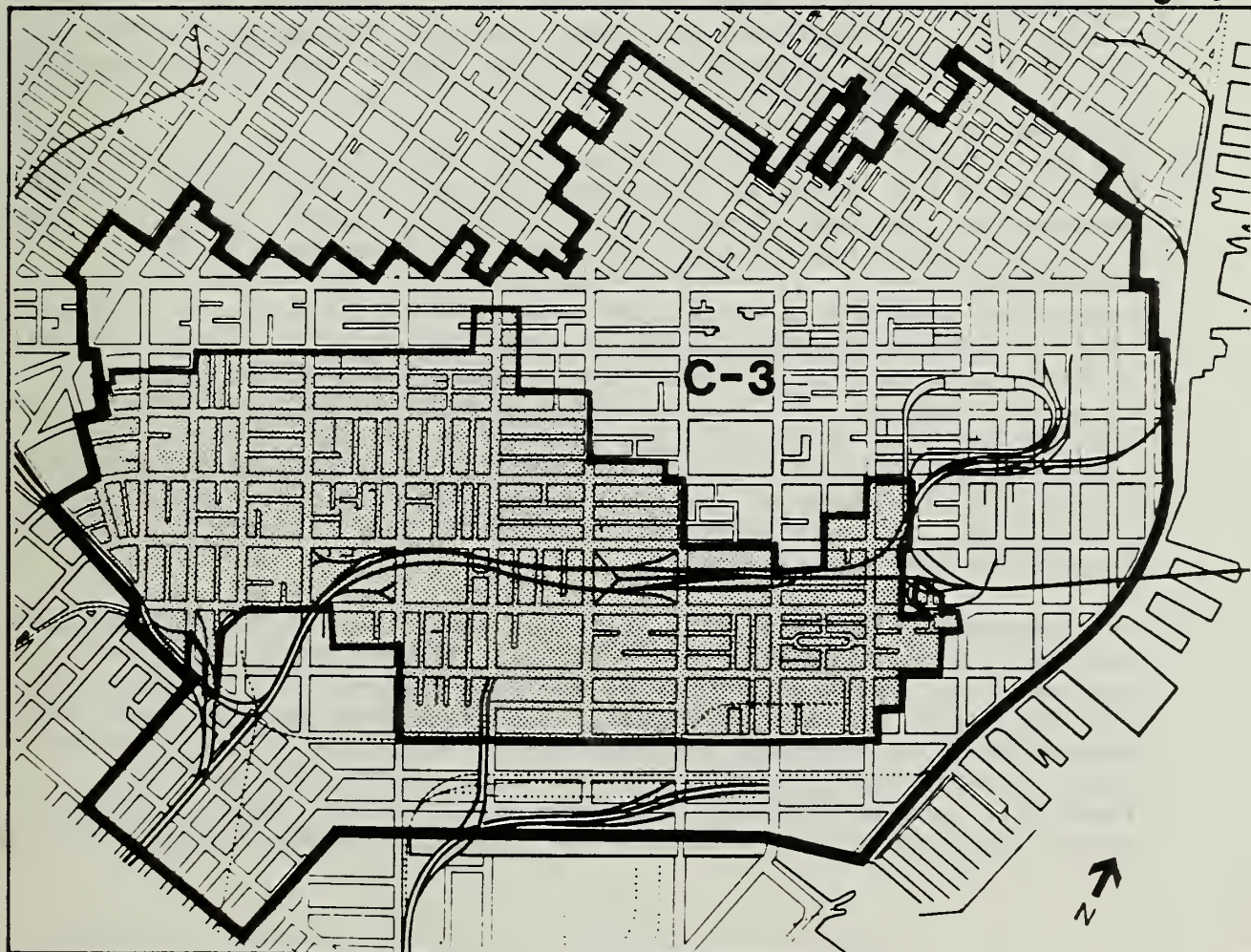


APPROXIMATE BOUNDARIES OF SOUTH OF MARKET/FOLSOM (SOM/F) SURVEY AREA



SOM REZONING AREA

Figure 6



COMBINED SURVEY AREA - C-3 DISTRICT AND SOM/F



SOM REZONING AREA

INTRODUCTION

Notes - Introduction

/1/ Data sources for land use and employment forecasts included:

- o Department of City Planning 1981/2 employer/employee surveys for the South of Market/Folsom area (SOM/F) and C-3 district;
- o Department of City Planning C-3 District Land Use Inventory, 1981
- o The Downtown Plan EIR, EE81.3, certified October 18, 1984.
- o Department of City Planning South of Market Land Use Inventory, 1984
- o The State Employment Development Department (EDD), citywide employment data for 1985.

Based on these data sources and employing the methodology used in the preparation of the Downtown Plan EIR, estimates for 1985 and and forecasts of 2000 employment and space use were developed for the Department of City Planning by Recht Hausrath and Associates (RHA). Their analysis and results are presented in several documents which are available for public review as part of this file. These are: Recht Hausrath & Associates, Economic Analysis for the South of Market Rezoning Study, Working Papers I & II, February 28, 1985 and February 4, 1986, and Memoranda from Recht Hausrath & Associates to the Department of City Planning, May 23, 1986, July 2, 1986, and September 24, 1986. Land use information for the C-3 and SOM/F have been updated to account for changes that have occurred since the original inventories, reflecting projects completed and available for occupancy at the end of 1985.

/2/ The SOM/F area for the initial purposes of the survey was bounded roughly by Folsom, Ninth, Potrero, Seventeenth, De Haro, Channel Street, and the Embarcadero. The SOM/F area included Showplace Square, Rincon Hill, parts of the Rincon/Point/South Beach and the Yerba Buena Center (YBC) Redevelopment Areas, all of which are outside the SOM rezoning boundaries. While most of the SOM rezoning area was contained within the original SOM/F area, a portion of the rezoning area north of Folsom and west of Fourth Street was formerly within the C-3 district and was included in the C-3 district surveys. In order to best utilize the survey data for purposes of this EIR and to simplify references to the survey areas in this document, the SOM/F refers to all non-C-3 portions of the survey area, including all of the proposed rezoning area. The C-3 district and SOM/F estimates and forecasts in this EIR were adjusted to account for this boundary shift.

/3/ The information indicates that there has been a decline in employment in San Francisco between 1981 and 1985, both citywide and in the greater downtown area. This was primarily due to a decline in office employment attributable to a number of factors: the overall economic slowdown which reduced business start-ups and expansions; relocation of large amounts of downtown employment (primarily in the "back-office" functions) to lower-cost suburban Bay Area locations or out of the region; corporate mergers and acquisitions resulting in relocation of headquarter activities

III. ENVIRONMENTAL SETTING AND IMPACTS

INTRODUCTION

to other cities; consolidation of functions and staffing within the City; and poor economic performance of some companies (in the oil-and-gas and financial industries in particular). Certain sub-categories of office employment, primarily business and professional services and certain sectors of the financial services industry, continued to show strong growth in this period. The extent of overall employment declines were also offset by growth in other sectors, primarily retail and hotel activity.

- /4/ As with the employment estimates for 1985 presented in the setting section, there was additional data available for use in developing the employment and space use forecasts for the SOM EIR which were not available when the Downtown Plan EIR was prepared. Total future employment in the C-3 district in 2000 is likely to be lower than was forecast in the Downtown Plan EIR. Employment in the C-3 is now forecast to increase by 24% between 1985-2000 compared to the 32% increase forecast in the Downtown Plan EIR for 1984-2000. The employment growth and associated impacts forecast for the C-3 district in the Downtown Plan EIR would be likely to occur further in the future, several years after 2000.

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

A. ZONING, LAND USE AND EMPLOYMENT

INTRODUCTION

The discussion below presents estimates of business and employment characteristics and space utilization patterns for 1985 and forecasts to the year 2000 for the South of Market rezoning area./1/

The methodology for estimating and forecasting existing and future employment and space use analyzed in this EIR as described in the preceding introduction to the setting and impacts chapter is consistent with that used in the Downtown Plan EIR (EE81.3)/2/ The setting (1985) information and economic forecasts are derived from a number of sources including land use inventories and employer and employee surveys covering the SOM and nearby areas; existing published employment data; and prior planning and environmental studies prepared by the Department./3/ The analysis in this EIR used these data to develop detailed employment and space use estimates for 1985 and to forecast changes in employment and space to the year 2000.

The setting estimates and forecasts of future conditions developed for the SOM EIR considered the relationship in terms of growth potential and types of economic activity between the SOM and C-3 district, in the context of surrounding areas such as Mission Bay, as well as the city and Bay Area region. The SOM area's economic growth thus takes into account policies of various area plans adopted and under consideration in the surrounding area (described in further detail below), as well as city-wide, regional, and national economic factors and trends.

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

SETTING

Zoning

The proposed rezoning area encompasses approximately 460 acres of the South of Market (SOM) Area. Existing permanent zoning classifications in the project area are shown in Figure 7. Most of the area from Folsom Street frontage properties on the north side, to the southern boundary of the rezoning area along the north side of Townsend Street, is within M-1 (Light-Industrial) or M-2 (Heavy-Industrial) zoning districts. Isolated parcels are in P (Public) districts and one RC-2 (Residential-Commercial Combined) district surrounding South Park. Most of the area north of the M-1 and M-2 districts is within a C-3-S (Downtown Support) district, with a smaller C-M (Heavy Commercial) district located west of Ninth Street. There are several small residential districts scattered throughout the SOM, primarily west of Sixth and north of Folsom Streets. These districts include RH-2 (Residential-House, Two Family), RM-2 (Mixed-Residential, Moderate Density) and RC-3 (Residential-Commercial Combined, Moderate Density) districts, which generally encompass existing residential enclaves on side-streets. One larger RC-3 district, along Sixth Street between Mission and Folsom, includes the sites of several residential hotels.

C-3-S, C-M and M districts permit the following activities as principal uses: professional and business offices; retail business and personal service establishments; entertainment and assembly; home and business services; automotive sales and services; repair garages (for minor repairs only in C-M districts); parking lots and structures; wholesaling; and storage. C-3-S districts allow a more limited range of storage activities than the other districts. Both C-3-S and C-M districts permit a very limited range of light manufacturing uses, generally restricted to such activities as assembly and packaging, and light food processing, and to use of low-powered machinery and occupancy of less than 100% of the building. Residential use is permitted as

SOUTH OF MARKET PLAN **EXISTING USE DISTRICTS**

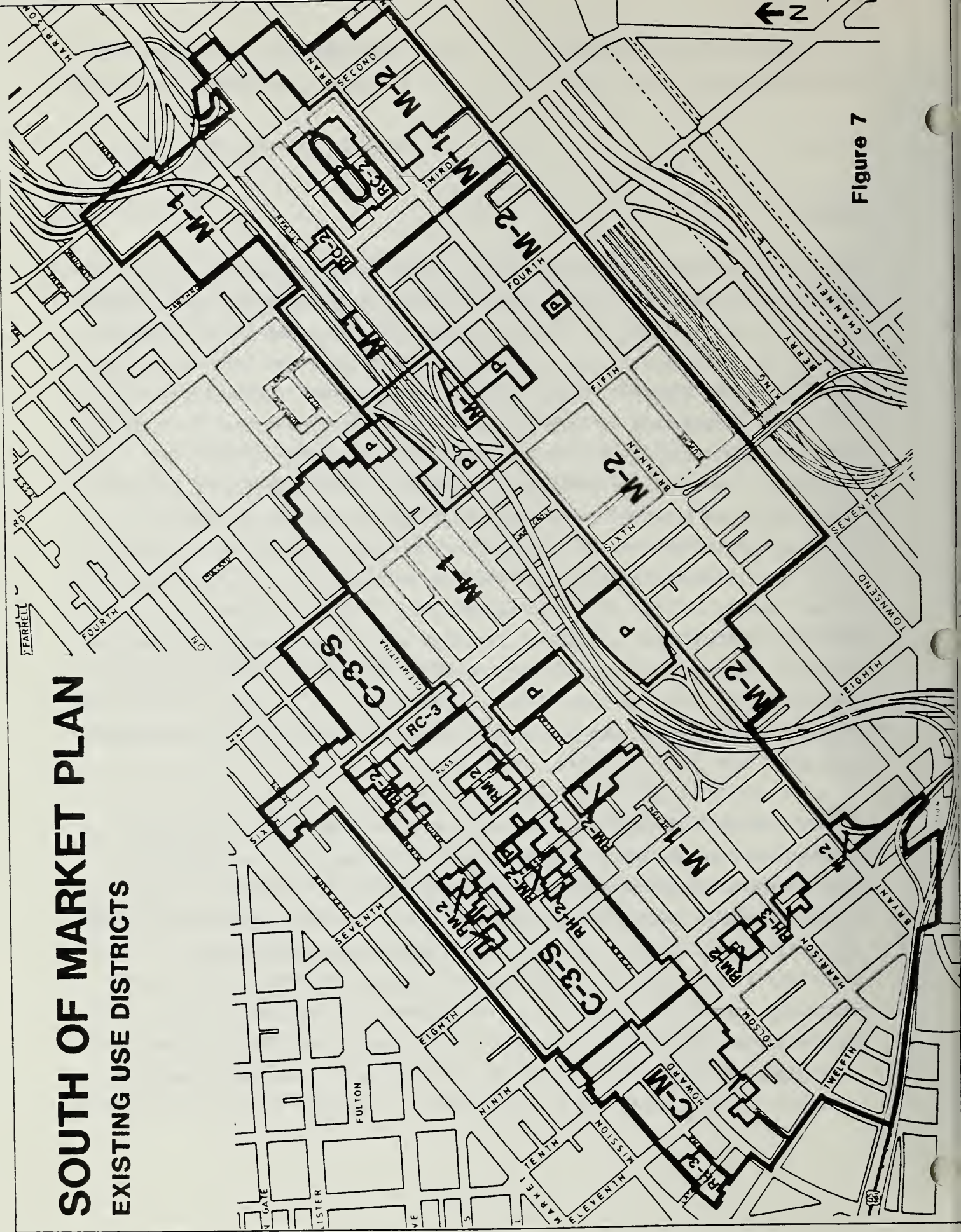


Figure 7

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

a principal use in C-3-S districts and allowed with conditional use authorization in the other districts.

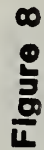
M districts generally permit manufacturing uses. M-2 districts permit the same uses as M-1 districts in addition to some heavier industrial uses. M-2 zoning imposes fewer screening requirements than M-1, as these uses are presumed to be located at a considerable distance from residential districts. In terms of permitted uses, M-2 is the least restrictive zoning in the Planning Code. Some of the uses permitted only in M-2 districts include such activities as shipyards, junkyards, bulk storage of flammable materials and manufacture/processing of specified food items such as liquor, meat products or refining of sugar.

Allowable Floor Area Ratio (FAR)--the ratio of building floor area to the area of the site--is 9.0 to 1 in C-M districts and 5.0 to 1 in the C-3-S, M-1 and M-2 districts. (However, as mentioned, the C-3-S district within the SOM rezoning area was limited to a 2.0 to 1 FAR with the adoption of the Downtown Plan to maintain consistency with the interim Special Use District controls in effect at that time.)

Existing residential districts permit residential densities ranging from two units per lot (or one per 1500 sq. ft. of lot area with conditional use) for RH-2 districts, up to one unit per 400 sq. ft. of lot area for RC-3 districts. In addition, the RC-2 and RC-3 districts permit general commercial uses such as retail, personal services, and office space on the ground floor as principal uses and on upper stories by conditional use. The FAR for these districts are 1.8 and 3.6, respectively, applicable to commercial uses only.

Existing height limits in the SOM rezoning area range from 30 to 160 feet (see Figure 8). Generally, higher height limits apply at the northern and eastern edges of the rezoning area and decrease towards the center of the area. The majority of the rezoning area and virtually all of the area west of Fourth Street and south of Folsom Street is within height districts of 50 feet or

RH-2/Two-Family Residential
 RH-3/Three-Family Residential
 RM-2/Moderate Density Residential
 RC-2/Moderate Density Residential-Commercial
 RC-3/High Density Residential-Commercial
 C-3-S/Downtown Support Commercial
 CM/Heavy Commercial
 M-1/Light Industrial
 M-2/Heavy Industrial
 P/Public



III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

less. (The two exceptions to this rule are the Hall of Justice site (105 feet) and a senior housing site near Yerba Buena Center (YBC) (88 feet).

There are no building bulk controls that apply to height districts of 50 ft. or less in the SOM rezoning area. Building bulk controls for the remaining height districts are as follows: 160-M, 130-L, 105 and 88-K. An M bulk designation means that above a height of 100 feet, the maximum permitted building length is 250 feet and the maximum permitted diagonal dimension is 300 feet; in L and K districts the length and diagonal limits are the same as M districts but apply at heights of 80 feet and above in L districts and 60 feet in K districts.

Interim controls were adopted for the rezoning area on October 2, 1986 for eighteen months, and subsequently extended for six months to October 2, 1988. (As explained in the Introduction to the Setting and Impacts Chapter page 42, the interim zoning controls are described in the Initial Study, beginning at page A-1)

Surrounding Land Uses And Public Plans

The project area is immediately south of the C-3, downtown office and retail areas and is generally considered part of the greater downtown area. The Rincon Hill Plan area is adjacent to the project's northeast boundary. The San Francisco Redevelopment Agency (SFRA)'s Yerba Buena Center (YBC), Rincon Point, and South Beach Redevelopment Areas lie to the northeast, east and southeast of the project area, respectively. Immediately south of the project area is the proposed Mission Bay Plan area, and the Showplace Square area is adjacent to the project's southwestern border. Each of these areas is the subject of recently completed or ongoing planning efforts of the City Planning Department, or part of SFRA areas and subject to development in accordance with the agency's adopted plans.

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

The Downtown C-3 districts contain the City's office core and accommodate the majority of San Francisco's employment. Approximately 90 million square feet of commercial building space is located here, including 60 million square feet of offices with the remaining space in retail, hotel, and general commercial uses. Land use policy for the C-3 districts is stated in the Downtown Plan which became effective in October 1985. The Downtown Plan, among other things, generally reduced maximum development potential in the downtown core and redirected new development to the C-3 district immediately south of Market Street in the vicinity of the TransBay Terminal. The new controls established criteria regarding reduction of wind and shadow impacts, protection of architecturally and historically important buildings and stricter design standards for new construction, and imposed annual limits on new office development. This annual limit was subsequently reduced with the passage of Proposition M, passed by San Francisco voters in November 1986.

The Rincon Hill Plan area is a 55-acre site which currently contains industrial structures housing warehouse and light-industrial uses, a small residential community, and some office and institutional uses. The Rincon Hill implementing zoning controls became effective in January of 1986. It created a new mixed use district with emphasis of new construction of medium to high density residential development with supporting commercial uses. It is estimated that up to 2,400 housing units could be developed under the plan. Commercial uses were directed towards the outer portions of the plan area to provide a visual and acoustical buffer between the central residential uses and the Bay Bridge and freeways.

The Rincon Point-South Beach Redevelopment Plan was adopted in 1981, modified and readopted in 1984. The plan called for the development of between 2,000 and 3,000 new units of housing designed for all income groups; historic preservation and adaptive reuse of specified buildings; provision of two waterfront parks; development of a major hotel; a large boat harbor and improvement and re-routing of the Embarcadero Roadway. The boat harbor has been completed and in operation since November 1986. The majority of the

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

proposed housing units were under construction by January 1987./4/

The Yerba Buena Center Redevelopment (YBC) Area covers approximately six-blocks bounded roughly by Third, Fourth, Market and Harrison Streets. The redevelopment plan calls for hotels, entertainment/cultural uses, office, retail, institutional uses and includes the Moscone Convention Center (for which San Francisco voters approved an expansion in November 1986). The YBC Plan also calls for the construction of 2,110 housing units, 1,143 of which would be for low-income elderly households. Most of this low-income housing was completed or under construction by the beginning of 1987.

The Development Disposition Agreement between Olympia and York and the Redevelopment Agency has been amended, and the Board of Supervisors has amended the lease with the Agency to permit expansion of Moscone Convention Center. The expansion includes meeting rooms on top of the existing underground Convention Center, and additional exhibit hall space underground on Central Block-2, bounded by Third, Howard, Fourth and Mission Streets. The two parts of the Convention Center will be connected by walkway under Howard Street. A new lobby will be built above ground on the north side of Howard. Parking originally proposed to be under Central Block-2 would be relocated to the Fifth and Mission Garage or other nearby locations./5/

Mission Bay is the subject of a current planning effort by the Department of City Planning. The Mission Bay Plan, Proposal for Citizen Review was published January 1987. The plan calls for the creation of up to 8,000 new housing units of varying densities, unit sizes and income levels; a major wetland and open space network; a central neighborhood shopping district; approximately four million square feet of office space; and two and one-half million square feet of service/light-industrial and research and development uses.

The Showplace Square area is a major design and showroom center located immediately southwest of the rezoning area. A Department study and area plan

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

for the Showplace Square area is in the initial stages at this time. No specific recommendations have been developed at this stage.

Land Use

The SOM contains a unique mix of building space containing light-industrial, manufacturing, commercial and residential uses interspersed throughout the area, such that in many parts of the SOM there is no distinct land use pattern. The topography of the area is generally flat, reflecting its original profile of salt water marshes which were gradually filled during the late nineteenth century. The grid pattern includes blocks which vary in size but are generally considerably larger than those north of Market Street and throughout the rest of the city.

In terms of land use and economic activity, the SOM rezoning area can be divided into two distinct sub-areas, east and west of Fourth Street. In the area east of Fourth Street and south of Folsom Street, office is the predominant land use mixed with services, warehouse and industrial uses, which are more similar to those in the downtown core than the rest of the SOM. Therefore, this area is more directly influenced by development in the downtown core. It is the location of a number of conversions of industrial and warehouse space to offices.

The rest of the rezoning area west of Fourth and north of Showplace Square encompasses most of the original interim South of Market Industrial and Housing Special Use District, and consists of land uses and business activities which are more commonly considered traditional South of Market functions. These include a mix of service, distribution and manufacturing establishments located in small-scale buildings, as well as a substantial residential component. In general, because of location, image, the types of space available, and preferences of businesses for space close to the downtown, this area has not experienced a high degree of change in use and character in recent years compared to the eastern portion of the rezoning

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

area, or the rapidly expanding Showplace Square area, which is just outside the rezoning area boundaries.

Employment and Space Use

The rezoning area contains a wide variety of businesses. The area cannot be simply characterized as industrial or office nor even entirely commercial, as residential enclaves are interspersed throughout the rezoning area. Businesses are attracted to the project area for different reasons. Inexpensive rents relative to the downtown area, and proximity to the central business district offered by SOM locations are attractive to most business activities, particularly those industries associated with downtown businesses. This includes both back offices of downtown firms, as well as industries whose primary business is to provide services to these firms. Such service activities include printers, advertisers, graphic designers, building maintenance and construction companies. Good accessibility to freeways has been important to those industries which serve regional markets. This also includes service businesses in the area as well as some manufacturing firms in the SOM. Sales/showrooms firms are often attracted by the combination of accessibility to freeways and to the downtown (particularly those involved in office equipment sales).

For some businesses, the benefits of a SOM location are the interaction with other similar firms in the area. For example, near the Showplace Square area the presence of a large number of showrooms in a small area and a diversity of choices for customers/clients enhances the business climate for all concerned by establishing a well known and attractive regional sales center. Similarly, some manufacturing firms are part of a larger production process whereby goods and products are exchanged with other SOM manufacturers. Some manufacturing firms remain in the area because of the large investments that were made in their existing facilities.

The discussion below provides a general description of the distribution of

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

employment by business activity throughout the rezoning area, and the relative amount of space devoted to each use in 1985 (see Tables 2 and 3 pages 73 and 74). Where businesses tend to concentrate in certain locations within the rezoning area, the reasons for these preferences are discussed.

Office Activities

Total office space in the rezoning area is approximately 3.83 million square feet, about 26% of all occupied building area. Office employment is approximately 8,095 jobs, about 35% of area employment.

Business activities occupying office space in the rezoning area include establishments engaged in administrative, information processing, and professional service functions. These include the office functions of companies in a variety of different industries.

There are small businesses in office space that provide business and professional services such as advertising, graphic arts, and architectural services. The area also provides office space for newer, "high-tech" firms involved in such activities as computer graphics, and film and video design and production for such activities as corporate marketing and public relations. Sales representatives, import/export offices and small Finance, Insurance and Real Estate (FIRE) companies are other examples of SOM office activities. There are also some mid-size companies with all of their operations in one facility which are located in the SOM. Examples include such businesses as book publishing, insurance, and larger architecture and engineering firms. Many of these small and mid-sized office activities have been locating in converted industrial space along both Second and Townsend Streets. Some are new to the area, others have been in the SOM for many years. This includes such activities as the office functions of manufacturing concerns, whose production functions may have already vacated the area, or union headquarters and hiring halls.

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

There are also back offices in the SOM, those activities which fulfill administrative and data processing functions of large companies, but which do not include "front" office corporate management operations. These activities value locations near to the downtown although they also require large sites which offer large, undivided floor areas. Back office is concentrated along Townsend and Second Streets, and in the vicinity of Yerba Buena Center (YBC).

There are also offices of local and federal government in the area. Most SOM government offices are located in the vicinity of Fourth and Bryant Streets with the bulk of this employment in the Hall of Justice building.

Service Activities

Space devoted to services equals approximately 3.39 million square feet, about 23% of the area's occupied space. Service employment is approximately 4,550 jobs, about 19% of total project area employment.

This group of business activities includes firms that provide a service, not a product, and are primarily located in other than office space. Some are located in storefront space that could be categorized as retail; others are in industrial-type space; and others are in special purpose facilities (e.g. post offices, auto repair garages, or schools). There is a variety of service businesses in the project area. These activities include such functions as construction companies and related services; transportation, communications, and freight and warehousing services; repair, auto, and building services. They are located throughout the rezoning area.

Sales/Distribution Activities

More SOM space is devoted to sales/distribution than any other of the business activities classes analyzed. This space accounts for approximately 5.8 million square feet, or 40% of the area's total occupied space. Employment in the Sales/Distribution category is approximately 7560 jobs, about 32% of the

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

area total.

Sales activities can be broken down into two categories: convenience retail, including restaurant, entertainment and recreation uses; and sales/showroom activities. Distribution activities constitutes a separate employment category.

Convenience Retail. While sales activities are located throughout the rezoning area, convenience retail and restaurant activities are concentrated in the area west of Fourth Street and north of Harrison Streets. These activities are also prevalent on Third Street near the CalTrain Station at Fourth and Townsend Streets. They are generally small businesses located in storefront, retail space. Personal services such as barber shops are also included in this group. There are also bars, nightclubs and theaters, and health and sports clubs in the SOM which serve customers from a larger area. Many of these activities are centered around Folsom Street. In recent years, these activities have attracted younger people and the gay community. Some of the restaurants, bars, and recreational facilities in the rezoning area also serve those employed in the downtown.

There are also some smaller motels and hotels in the project area included in the retail sales category. Access and visibility from the freeway are advantages to some of these businesses while the availability of existing, older hotel buildings continue to make hotel operation a viable business in the area.

Sales/showroom. The sales/showroom activities in the rezoning area include businesses engaged in wholesale sales (which may include an on-site retail component) and display functions. Some are located in storefront space, others in specifically designed showroom space, and some (such as auto parts sales) in what might be considered industrial space. Some facilities include on-site warehousing. These activities include the sale of a variety of goods such as furniture and home furnishings, office equipment, and supplies. They

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

also include sale of automobile parts and supplies, flowers, apparel (factory outlets), and, miscellaneous shopping goods (such as sporting goods, books, gifts and jewelry). Showroom functions tend to concentrate in the corridor between Showplace Square and the Merchandise Mart (located on Market Street between Ninth and Tenth Streets).

Distribution. These activities are involved in warehouse and delivery functions. They are generally located in warehouse and industrial space. Businesses in the SOM rezoning area distribute many different types of goods including food products, wine, spirits and other beverages, industrial supplies and equipment, electrical parts and equipment, and apparel and other general merchandise. This category includes distribution businesses as well as the distribution functions of larger companies (e.g. department store warehouses or manufacturer's distribution facilities). Distribution activities locate in the SOM due to its good freeway access, proximity to downtown and its central location within the region. Lower rent levels and the types of available space such as large undivided floor areas make the SOM an attractive location for these businesses.

Manufacturing Activities

Manufacturing activities are contained in approximately 1.3 million square feet of space, about 9% of the area total. There are about 2,875 manufacturing jobs in the rezoning area, about 12% of total project area employment.

This category includes establishments located in industrial space that produce a product on-site such as those involved in wood or metal products manufacturing, food processing, or printing. Printing and related business represent the largest group of manufacturing activities remaining in the project area. Apparel manufacturing, primarily sewing contractors, also remains in the area and provides the second largest amount of manufacturing employment. Motion picture production and large scale art workshops (such as

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

for painting, sculpture, and for making theatrical props) are found in the rezoning area and are included in the manufacturing category. Manufacturing activities are located throughout the SOM rezoning area.

On-site Building Maintenance and On-site Construction

In addition to the business activities described above, there are workers employed in on-site building maintenance and on-site construction activities in the rezoning area. This employment is separately identified because these employees have a base of operation outside the project boundaries. (These jobs are different from employment in construction firms and building maintenance companies permanently located in the project area, which are included in the service activities category discussed above.)

Undeveloped Land

There is a large amount of undeveloped land in the SOM rezoning area. Much of this land is used for parking and storage for equipment or vehicles, such as buses. Another large component is land designated as rights-of-way for the Bay Bridge, rail lines, and freeways that traverse the area. Some of these right-of-ways are used for parking. Undeveloped land areas are generally large sites; although there are smaller vacant lots and storage yards scattered throughout the rezoning area, often along the mid-block alleyways.

Residential Space

Residential space is also an important component of SOM land uses. Residential uses and population are discussed in the Population and Housing section.

Architectural Context

The scale of development is generally low-rise, two to five story buildings of

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

concrete, brick and wood construction materials. The large majority of existing development is less than 50 feet in height.

Architecturally, many of the commercial buildings share a common industrial character. The style of the buildings range from pre-20th century industrial style to high-style Art Deco buildings of the 1930's and 1940's. Although the mixture of SOM business activities has resulted in a wide variety of commercial and industrial building types, most buildings share common architectural elements including scale and proportion, texture, materials and patterns of facade and window treatments.

Residential buildings generally are built in the Edwardian style, and grouped in enclaves along the interior side streets. These buildings are usually three-story flats and apartments consistent with the low-rise character of the area. Taller buildings devoted to residential hotel use are located along Sixth Street. These structures range from approximately 40 to 80 feet in height.

Open Space

The SOM is one of the areas of San Francisco which is generally sunny and not subject to frequent fog covering. The SOM's wide streets and low-rise character provide ample sunlight to streets, sidewalks and open space. However, the amenities of the built environment are limited. Open space is very scarce in the SOM. The SOM is identified in the Open Space Element of the Master Plan as a high need neighborhood for open space and recreational facilities. These neighborhoods are described as, "...the more densely populated, older areas of the city where low-income, minority group populations are concentrated, where there are large numbers of young and elderly, and where people have less mobility and financial resources to seek recreation outside of their neighborhood."/6/ Existing public parks in the study area are limited to the South Park green (bounded by 2nd, 3rd, Bryant & Brannan Streets) and a small public park at Langton & Howard Streets. In

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

addition there are two paved playground facilities, one at Bessie Carmichael School at Folsom and Columbia Streets, and another at the Filipino Education Center at Fourth and Harrison Streets.

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

IMPACTS

Introduction

This section presents forecasts of space use and employment by business activity in the SOM under the proposed plan for the year 2000. Forecasts for employment and space under existing (permanent) zoning controls are also shown. Where there are substantive differences in the two forecasts for a given business activity, the reasons for these differences are discussed.

The economic analyses underlying the employment and space use forecasts include review of recent employment trends and historic patterns; identification of key factors in location decisions of firms; consideration of geographic areas competitive with the rezoning area; and projected business trends relevant to each business activity. Against the overall background of this context, the forecasts reflect economic and real estate market conditions that would exist in the SOM under the proposed Plan and rezoning, or under existing zoning controls in the future. While general economic conditions are independent of the SOM Plan policies and zoning controls, the Plan would affect the amount, type, and location of space that could be provided in the area, and the ability of businesses to expand in the SOM, compared to existing zoning.

In the course of the economic analysis, consideration was given to the effect on SOM activity of planning and development activities in surrounding areas, including potential development of the Mission Bay project. The potential effects of these surrounding activities on development potential in the SOM are discussed below.

Market Conditions and Trends

Given the close proximity of the SOM to the downtown core, office activities have been and will continue to be the source of pressures for land use change

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

and business expansion in the area. Therefore, recent changes in office market conditions have implications for the estimates of development potential in the SOM and surrounding areas for the forecast period.

The office market had low vacancy rates and large increases in office rents in the late 1970's and early 1980's. These trends had spillover effects in the SOM. Office firms seeking lower rents than in central downtown locations were willing to pay more for space in the SOM than some other uses. In addition, service and sales businesses priced out of the office core were competing for lower-priced space on the periphery of downtown. This was when many of the major office projects were proposed in the C-3 district and south of Market Street, both within and near the rezoning area.

However, since 1981 downtown office market conditions have softened considerably. Due to the large amount of recent highrise office building construction, conversions of industrial and warehouse uses to offices, the relocation of several large space users out of San Francisco, the recession in the early 1980's, and other factors affecting operations and growth potential for San Francisco firms, office vacancy rates increased in the greater downtown and the SOM in the mid-1980's and rents declined.

Also, there is office space in projects approved or under construction in the project area and the greater downtown that has yet to be placed on the market, as well as space which has been completed and recently offered for lease. Within the rezoning area there is approximately 1.25 million gross sq. ft. of new office space that had been approved or under construction as of mid-1987. Most of this space, more than one million square feet, is in three projects: the recently completed Marathon development at Second and Folsom Streets, and the 600 Harrison Street development currently under construction, and the partly completed conversion of the Second Street Square project at Second and Bryant Streets. Space is currently being leased in all three buildings. In addition, considerable office space is approved or under construction in the areas adjacent to the SOM project area: approximately 1.3

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

million square feet in the YBC Redevelopment area; 300,000 sq. ft. in the South Beach Redevelopment Project; 200,000 sq. ft. in the China Basin building at 3rd and Berry Streets; and 525,000 square feet in the Hills Plaza project in the Rincon Hill area.

Due to these current market conditions, it will take some time for the existing inventory of space to be absorbed. It is important to note therefore, that the effects of the proposed Plan which reduce office development potential, as well as the effects of planning and development activity in the surrounding areas on the SOM Plan area, may not be fully realized within the forecast period. As existing and approved space is absorbed, the effects of surrounding planning and development activities will increasingly influence and be influenced by activities in the SOM Plan area. These interactions are discussed below, as appropriate, in addressing impacts upon individual business activities.

Zoning Changes

As explained in detail in the Project Description, the original SOM Housing and Industrial SUD, subsequent interim controls, and the SOM Plan controls were proposed to protect traditional SOM land uses from competition and displacement by higher rent-paying office uses expanding outward from the downtown core, by creating three new commercial use districts: the SLR(Service/Light Industrial/Residential), SLI (Services/Light Industrial) and SSO (Service/Secondary Office) districts. All of these would be more restrictive than existing controls in terms of intensity of use, and in most instances, the range of permitted uses. The SLR and SLI districts are designed to encourage growth and expansion of existing light-industrial, business services and general commercial uses. Both districts prohibit development of new office uses. Office uses would be permitted in the SSO district along Second Street and on parts of Townsend Street west to Seventh Street see Figure 3, page 31.

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

Table 1 presents the major differences between proposed use districts and the existing districts they replace.

The rezoning would create two new residential classifications, the RED (Residential Enclave) districts, and the RSD (Residential Service) district. The proposed RED districts are designed to maintain as principal permitted uses the existing residential enclaves interspersed throughout the SOM. The proposed RSD district would permit construction of high-density residential and general commercial uses similar to developments currently underway in the adjacent YBC area. The proposed rezoning also includes an RC-2 designation for the South Park Area. The RC-2 district would maintain the existing South Park district zoning with special provisions which, among other things, would reduce FAR and prohibit office use.

Implications of Zoning Changes

The differences in the effects of existing zoning controls and those proposed under the SOM Plan are illustrated by the amount of change in employment and space use for individual business activities between 1985 and 2000 under each set of zoning controls.

Under both SOM scenarios (the SOM Plan and existing zoning), there would be increases in occupied space, increases in employment and declines in vacant space from 1985 through 2000 (see Tables 2 and 3 pages 73 and 74). Many types of changes in space use and occupancy are incorporated in the aggregate addition of SOM space for all uses, ranging from 1.1 million gross square feet (SOM Plan) to 1.3 million gross square feet (existing zoning). In both scenarios, about one million gross square feet of space that was vacant in 1985 would be absorbed, so total occupied space would be increased by either 1.9 or 2.2 million gross square feet, depending on the zoning. Within the totals, relatively large growth of employment and occupied space, primarily for office activities, would be offset by declines in other activities.

TABLE 1: COMPARISON OF SELECTED PROVISIONS OF PROPOSED AND CURRENT SOM ZONING CONTROLS/a/

ZONING CATEGORY	SOM PLAN						EXISTING ZONING						
	RED	RSD	SPD	SLR	SLI	SSO	M-1	M-2	C-3-S	C-M	RH-2/3	RC-2/3/b/	RM-2
: :													

* Depending on location-See Figures 3, 4, 7 and 8.

/a/ See Article 9 for specific standards regarding sub-categories of generalized land uses in Table 3.

/b/ Commercial uses above the ground story require conditional use authorization.

/c/ Dwelling units per square feet of lot area except where otherwise noted.

/d/ Minimum standard otherwise based on permitted density of nearest R district.

/e/ In these districts dwelling units are permitted as of right at the rate of two units per legal lot in RH-2 and three units per lot in RH-3 districts. Dwelling units are also permitted based on the unit to lot area ratios given above with conditional use authorization.

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

Moreover, within each business activity, certain types of businesses are expected to grow in the SOM (particularly under the SOM Plan) while others are expected to decline.

In the SOM, under both zoning scenarios, Office is by far the largest growth sector adding 2.7-3.7 million gross square feet of occupied space and 6,850-9,635 workers. The proposed rezoning would result in less office growth in the SOM during the forecast period than would existing zoning. The differences between the two scenarios would be greater beyond 2000, since much of the office space expected to be absorbed between 1985 and 2000 is space already available or approved, and thus not affected by the rezoning restrictions.

The forecasts for the Services business activity reflect more opportunities for service establishments in this area under the proposed rezoning. Under the SOM Plan, a small increase in employment is forecast; under existing controls, employment would decline. However, the space forecasts show declines in space occupied by service activities under both scenarios. This is because some of the large space users in this category (warehousing and transportation services for example) are expected to continue to leave the SOM in any case. The smaller service establishments (more related to downtown businesses) expected to locate and expand in the SOM under the proposed rezoning occupy relatively less space. The occupancy of that space would not offset the decline in the occupancy of larger, outmoded facilities.

A similar phenomenon is evident in the sales/distribution category. Overall, there would be growth of employment under both scenarios, while occupied space in this use would decline. Distribution facilities with large amounts of space and relatively few workers are expected to continue to leave the SOM. Employment is expected to grow, however, because others in this category (primarily sales-related establishments) are expected to expand in the SOM. Growth is expected in sales/showroom activity, convenience retail/entertainment businesses and hotel/motel activity. There would be

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

relatively more growth under existing zoning than under the proposed SOM Plan since the Plan imposes restrictions on locations and thus on growth potential for some of these uses.

Both scenarios show a decline of space and employment for manufacturing business activities. There would be somewhat less decline with the SOM Plan than with existing zoning since the Plan would preserve location and space opportunities in the SOM for manufacturing operations that might otherwise compete with office activities. As with the Services business activity, the extent of this effect would be relatively limited during the forecast period, because demand for manufacturing/service space is expected to continue to decline. In addition, there would be less pressure generated by office uses, the demand of which would be satisfied in large part by space already converted or constructed and available for office occupancy.

Finally, the forecasts for building maintenance and construction employment reflect the different scenarios for development. There would be more building maintenance employment under existing zoning (with more occupied office and retail space). There would also be more construction activity (due to new development, conversions, and upgrading) with existing zoning compared to the SOM Plan scenario.

In summary, the restriction of office development as proposed in the SOM Plan would enable opportunities for growth or preservation of lower rent paying activities. Service uses which rely on a downtown client base would benefit the most from the proposed rezoning, as these are uses which have a continuing need to be near the downtown and which compete with small, low-rent paying office users for comparable space adjacent to the downtown. The prohibition of office space from the SLR and SLI districts would preserve opportunities for these uses in the SOM. Manufacturing and distribution uses which occupy large, and often outmoded facilities, will continue to relocate outside the SOM and greater downtown area, although at a slower rate than would otherwise occur under existing zoning. Convenience retail/entertainment activities are

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

expected to grow in response to surrounding residential and commercial development and eventual occupancy of already approved office space within the SOM. Larger, specialized retail uses also may grow in the area over the forecast period.

TABLE 2: SOUTH OF MARKET STUDY AREA SPACE BY USE (Thousands of Gross Sq. Ft.)

Use	1985	2000			
		SOM Plan		Existing Zoning	
		Total	% change	Total	% change
Office	3,836	6,582	+72%	7,579	+101%
Services	3,392	3,311	-2%	2,837	-16%
Sales/Distribution	5,807	5,091	-12%	5,250	-10%
Manufacturing	1,553	1,534	-1%	1,083	-30%
Subtotal Occupied	14,588	16,518	+13%	16,749	+15%
Vacant /a/	2,739	1,957	-29%	1,898	-31%
TOTAL	17,327	18,475	+7%/b/	18,647	+8%/b/

/a/ Vacant space includes new construction and conversions not yet occupied, and existing space vacated as a consequence of move-outs or declines in employment. This definition of vacant space includes more than vacant space that is on the market, available for lease. It includes space that may be occupied temporarily at lower than average employment densities but which could eventually accommodate additional employment, returning to occupancy at average employment densities.

/b/ Represents increase in newly constructed space.

SOURCE: Recht Hausrath & Associates

Employment and Space Use

Office Activities

Office employment is forecast to show the greatest increase in employment of all business activities under the Plan, both in absolute terms and in percentage growth. Office employment would grow by approximately 6,850 jobs under the Plan, an increase of approximately 84% (see Table 3)./7/ This is

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

approximately 2,785 fewer than are forecast under existing zoning, where a 120% increase in office employment is estimated.

TABLE 3: SOUTH OF MARKET STUDY AREA EMPLOYMENT BY BUSINESS ACTIVITY

Business Activity	1985	2000			
		SOM Plan		Existing Zoning	
		Total	% change	Total	% change
Office	8095	14,945	+85%	17,730	+119%
Services	4,550	4,625	+2%	3,935	-14%
Sales/Distribution	7,560	7,650	+1%	7,990	+6%
Manufacturing	2,875	2,710	-6%	2,090	-27%
Sub-Total	23,080	29,930	+30%	31,745	+38%
On-Site Building Maintenance	275	360	+31%	405	+47%
On-Site Construction/a/	35	85	+143%	145	+314%
TOTAL	23,390	30,375	+30%	32,295	+38%

(a) Annual average employment

SOURCE: Reclt Hausrath & Associates

Space devoted to office use would increase by approximately three million square feet under the proposed zoning, to seven million square feet, a 76% increase from 1985. Under current zoning a 100% space increase is forecast.

Generally, the proposed controls would greatly reduce the locations in the SOM Plan area which permit office use. The SLR and SLI districts would forbid new office uses. The SSO district would allow offices but imposes additional constraints on office development, reduced FAR and lowered height limits relative to existing controls, which would add to the cost of new and rehabilitated office space.

Under either existing or proposed controls, most office growth is expected to occur in smaller companies, including professional service businesses. This increase will be fueled to a great extent by the continuing growth in business and professional services, one of the fastest growing sectors of the economy overall. Growth is also expected in technology-oriented businesses such as computer-related enterprises and film and video facilities in office space. Smaller firms that need to be near the downtown but which do not need, or may be unable to afford, higher-priced downtown space will continue to occupy SOM office space, including rehabilitated loft-space and upper floor offices.

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

Mid-size companies such as book publishing, insurance, and larger architecture and engineering firms are not expected to grow as fast as smaller professional and business services. Office activities associated with older establishments that have been leaving the SOM area will continue to decline. These include offices of manufacturing activities and union headquarters and hiring halls. There will be some growth among the newer mid-sized companies. Under both scenarios, the SOM would continue to be an alternative for mid-size firms that wish to be near the downtown.

It is not expected that there would be a high rate of growth in back office activities in the short-term. Back office employment growth is expected to be stronger in the 1990's with most expansion in smaller back office operations; these could be divisions of larger corporations as well as data processing operations. Another source of back office employment in the area will come from maturing firms located in the C-3, which can use multiple facilities and look to the SOM as an alternative to the relatively more restricted and expensive space options in the C-3 district. In any case, there is not expected to be much potential for the development of new single-tenant data centers or administrative facilities in the area due to the competitive advantages of suburban locations and other San Francisco locations south of the SOM such as lower costs, access to a labor pool, and room for expansion.

Growth in city government employment is expected in the SOM. In addition, since government is a rent-sensitive office activity, it is also expected that federal and state government offices could relocate in the SOM area, from the higher cost central business district.

Overall, little difference is forecast between existing zoning and the SOM Plan in back office and government office employment. Potential for expansion of city government employment would be affected by the SOM Plan since the preferred locations for this activity (near the Civic Center and other existing facilities such as the Hall of Justice) would be re-zoned to prohibit new office activity. The greatest difference in office employment between the two scenarios is expected to occur among smaller firms, most notably professional service offices, some technology-oriented businesses and small firms with downtown clients, which are expanding most rapidly. Greater growth in this office employment would occur under existing zoning than under the Plan.

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

In terms of space use, the limitations on office use proposed in the SOM Plan would not substantially effect the amount of office space that would be constructed in the area within the forecast period. Office expansion would be accommodated in projects already approved, that have been recently constructed or are under construction, and in rehabilitated older buildings. To the extent there is more space in office use in the SOM within the forecast period, this is likely to be the result of conversions of existing space to office use rather than new construction. As discussed above, this difference would not be large; there would be less than a 15% difference in space in office use between the two scenarios in 2000. Over the longer-term (beyond 2000), limitations on new office use proposed in the SOM Plan would result in less office construction in the area.

In total, the differences in office employment forecasts for the SOM Plan and existing zoning controls indicate that office activity that would be expected in the SLR and SLI areas under existing zoning would not occur under the rezoning. However, due to the existing large supply of office space explained above, pressure for additional new office development or conversion is not expected to be great in the SLR or SLI in the short-term. Over the longer-term as the existing office supply diminishes, pressure for office space development in these districts would grow making the proposed controls more of a constraint to the market, relative to existing controls. This reduction in office development potential proposed under the Plan would tend to result in increased office rents relative to rents under existing zoning controls.

Within the forecast period, lower rent-paying office uses would be most affected, those uses which would have otherwise located in the SLR or SLI under existing zoning. These uses would have the most limited location options under the SOM Plan and would locate in the SSO district or areas outside the SOM such as Potrero, South Van Ness, the Civic Center area or outside of the City.

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

Over the longer-term, larger, higher-rent paying office uses would be affected. However, the higher-rent payers would still have the most location options within the area or other options in new office space in nearby areas such as Mission Bay, YBC, Rincon Hill, or Rincon Point-South Beach.

SOM Plan restrictions could encourage office development in the Mission Bay area earlier than would occur under existing controls. Simultaneous development of Mission Bay, should it occur, could reduce pressure for new office development in the SOM during the forecast period by providing a new location for office space adjacent to the SOM area. Over the longer-term (beyond 2000), there would be some spillover effects in the SOM along Townsend Street as a consequence of adjacent Mission Bay office development. That development would enhance the Townsend Street area as an office location, attracting office and associated retail and restaurant activities. The area would probably become more intensively developed than would otherwise occur without Mission Bay development.

Service Activities

The rezoning would be likely to preserve options for service activities, particularly for those who value proximity to downtown. Generally, service businesses are lower-rent payers compared to the other growing business activities in the SOM such as offices, retail/entertainment, sales/showrooms, and production activities such as film, video and computer related firms. Under existing controls these uses could continue to outbid many lower-rent paying service uses for space. The rezoning would reduce competition and upward pressure on rents for service space in the SLR and SLI districts by excluding offices. For this reason, the rezoning scenario projects a slight increase in employment in service activities, 75 jobs (2%), compared to a forecast decline under current zoning of approximately 660 jobs (-14%). The higher level of service employment under the rezoning could reflect, in part, relocation of service activities from the SSO district to the SLR and SLI districts. Some of these activities otherwise would have moved out of the SOM.

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

Space devoted to service uses would remain essentially constant, a two percent decline is forecast. Under current zoning an approximate 16% decline is forecast.

While protecting service activities as a class from encroachment of office uses in the SLR and SLI districts, there would be competition within the service activities category for SOM space. Therefore, sub-groups within the service activities classification show varying economic trends in the future with growth in some types of services, stable employment in others, and decline in others.

Services to buildings, communications/parcel delivery services and other downtown support services are expected to remain in the project area, with stable employment and some small growth expected. Some of these activities are quasi-office in nature and would pay relatively higher rents to stay in the area to maintain proximity to downtown.

Large space users such as transportation, freight and warehousing services have lower-cost and more convenient location options elsewhere. In addition, employment in construction service companies are expected to continue a long-term trend of slow decline in the SOM.

Employment in social services is likely to remain stable in the short-term and eventually show a slow decline in the long-term as competition for space and rents increase. The agencies and facilities expected to remain are those serving client groups in the area.

Auto repair services in the area are expected to remain stable through the 1980's and to experience slow decline as the area becomes more attractive to other competing uses, and auto-related services find lower-cost locations outside the SOM Plan area.

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

Sales/Distribution

Employment in sales/distribution activities is forecast to remain relatively constant through the forecast period under the proposed Plan and current zoning, showing increases of two and five percent, respectively. However, space devoted to these uses would decline by approximately 10% under either scenario. Changes in sub-groups of business activities in this category would vary greatly.

Generally, distribution activities are expected to decline in the SOM under both scenarios. These businesses are large space users. Many firms are located in outmoded facilities and the project area will not offer much lower-cost space for expansion in the future. The SOM area no longer has strong advantages of convenient access to transportation systems and major market areas; markets have become more dispersed, and San Francisco locations near downtown have become relatively more congested over time. As a result, there are often more convenient location options elsewhere. The decline in distribution employment may be slightly less under the Plan than under current controls because the exclusion of new office space could reduce demand for existing space currently occupied by distribution uses. However, to some extent this may result in increased vacant space rather than retention of distribution activities. Many distribution uses are leaving for the above reasons, which would be unaffected by the differing zoning controls. Consequently, vacated space may not be fully absorbed for some time by growth in other activities (besides office) because there is not adequate demand for these facilities and the costs of converting them to other functions are high.

Although continued growth is expected in showroom activities, most of this employment growth would occur in Showplace Square, outside the project area. Employment increases in showroom activities in the SOM area are not expected to be substantial nor differ meaningfully between the Plan and current controls.

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

For smaller sales and distribution activities and those providing products with a downtown market (e.g, office machines and furniture, paper and stationery products, restaurant equipment and supplies), the SOM area will continue to be a convenient and cost-effective location under existing or proposed zoning controls.

Convenience retail activity is expected to grow, as is restaurant and entertainment activity. The SOM area is developing a broader citywide clientele for restaurants and nighttime entertainment. The SOM Plan would restrict new nighttime entertainment uses to the SSO district, although existing uses would be permitted to continue, and expand in specified circumstances. (The restrictions on new nighttime entertainment activities modify the SOM controls as initially proposed in order to reduce potential conflicts with industrial and business service uses, and the nearby residential population.) While the overall employment growth in this category is expected to be comparable under both zoning scenarios, the SOM Plan could result in marginal difference in the distribution of these activities, with the SOM Plan resulting in a greater concentration of new nighttime entertainment uses within the SSO district.

Special events activity is expected to increase in the Showplace Square Area. This would stimulate nearby retail, restaurant and entertainment activity. Expected office employment growth would also contribute to the demand for small shops and restaurants to serve workers and clients/visitors. As growth in office employment within the SOM would be greater under existing zoning than under the Plan, resultant demand for these services would also be greater. The development of new residential communities in the Yerba Buena Center and South Beach Redevelopment areas, and the Rincon Hill Plan area would also support new convenience retail and restaurant development and could indirectly encourage the development and/or expansion of such uses in the SOM over time.

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

Manufacturing Activities

Under the proposed SOM Plan, manufacturing employment is projected to decline by 165 jobs (-6%), 620 fewer than under existing zoning. Manufacturing space would remain essentially constant under the Plan, a 1% decrease is forecast, while a 30% (470,000 square feet) decrease is forecast under current zoning. Thus, the rezoning would slow the rate at which manufacturing uses leave the area. This would be due to protective provisions of the proposed SLR and SLI districts which prohibit office use and prohibit or severely restrict nighttime entertainment uses, thereby reducing re-use potential and thus competition for these sites and existing facilities.

Most manufacturing employment in the study area is in industries which have been there for many years: printing, apparel, food products, and metals/machinery/electrical industries (a small amount of employment is in newer manufacturing activities such as film and video production studios and larger scale craft and design workshops). Many of the traditional manufacturing activities in the SOM are no longer suited to central city locations; their facilities are outmoded and underutilized. Suburban locations offer opportunities for new production facilities and better access to distribution systems. Demand for space by office, showroom, and entertainment activities presents opportunities for conversions and new development on older industrial sites. For these reasons, large-scale manufacturing is not expected to remain in the area under either zoning scenario.

While apparel manufacturing is expected to decline in the SOM area, some operations will remain by the end of the forecast period because of the importance of good public transit access for these very labor-intensive operations.

Some employment growth may occur under the Plan which would not be expected under current controls, particularly in the newer manufacturing activities

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

mentioned above: film and video production, arts/crafts production and some printing activities. The restrictions on office use proposed in the Plan, and the associated slower rate of rent increases for non-office space, would allow for a greater growth in these newer manufacturing activities.

Outlook Beyond the Forecast Period

Generally, much of the impact of the proposed rezoning would occur after the forecast period. As discussed, office space demand is the primary catalyst of competition for space and increased rents in the area. The current excess supply of office space will postpone the full impact of these development pressures until after the year 2000. In the longer-term, as office space is absorbed, the limitations on office use imposed by the proposed controls would result in increased office rents, thereby increasingly impacting rent-sensitive office uses. The lowest-rent paying of these uses would have to seek other options in other parts of the City, particularly south of the SOM, or outside of San Francisco. Competition for office space in surrounding areas, and office rents, would increase. This would impact service uses which occupy space comparable to small offices. For some offices, the alternative to locate in the Mission Bay area, should a development plan be approved for that area, may reduce this development pressure for some time. However, full buildout of Mission Bay together with intensive mixed use development of the YBC and Rincon Point/South Beach Redevelopment areas, and the Rincon Hill Plan area could ultimately increase development pressures in the adjacent SOM. This could also indirectly generate demand for personal service uses, retail and entertainment within the SOM.

Historic District

As discussed in Zoning above, the proposed general reductions in height limits and lower commercial FAR are expected to encourage retention of the existing building stock. Growth of employment is expected to be accommodated, to a large extent, in projects approved, under construction or already built but

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

not fully occupied as well as renovations and rehabilitation of existing space and intensification of space use over time through increased employment densities. Consequently, the building form and visual character of the SOM is unlikely to change dramatically over the forecast period.

In the course of developing the SOM Plan recommendations, the Department of City Planning recognized the presence of a number of architecturally meritorious warehouse and industrial buildings in the SOM, generally located along Second and Townsend Streets. Based on research by the Department, aided by files of the Foundation for San Francisco's Architectural Heritage (Heritage), the SOM Plan recommends that a historic district be established for this area. The Plan's historic district, along with additional areas proposed by Heritage, is to be scheduled for consideration by the Landmarks Preservation Advisory Board (LPAB) for their recommendation of final historic district boundaries. Ultimate establishment of the historic district would take place independent of actions on the proposed SOM rezoning. Adoption of the district would serve to protect contributory buildings within the district from demolition, or substantial alteration inconsistent with the architectural character of the district. It would also require that new construction within the district conform to the district's architectural character as stated within the historic district ordinance.

Open Space

Although residential population and building space is not expected to change appreciably in the SOM within the forecast period (see discussion in the Housing and Population Section, page 86), the problem of deficient open space to serve the resident and working population is expected to continue. A 1.9 acre site at the corner of Sixth and Folsom Streets is presently being designed as a park and recreation facility. Residents of the area also frequently make use of the open space on top of Moscone Center in the YBC area. Additional open space will be created in the San Francisco Redevelopment Area's proposed Yerba Buena Gardens project opposite Moscone

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

Center with construction expected in the early 1990's. However, neither of these facilities would satisfy completely the needs of the entire SOM population.

The proposed Plan would impose an open space requirement on all new commercial development at specified rates or, alternatively, payment of an in-lieu fee for the development of off-site open space amenities. Through these measures, potential adverse impacts on open space would be mitigated at the project level. The required open space area ratios and in-lieu fee amounts are stated in the mitigations section.

NOTES - Zoning, Land Use and Employment

/1/ Employment and space use in this EIR are presented in terms of business activities which are different from the broad standard industrial classifications (SIC) of employment (recorded in published statistics) and often used in economic analyses. SICs combine diverse mixes of business functions, whereas this analysis defines employment categories by the functions of business establishments. For example, the office headquarters of a manufacturing concern would be considered office and not manufacturing use. The major benefit of this approach is that employment can be related to the types of space in which the businesses are located. Since the functional distinctions between business activities in various types of space reflect differences in business operations, growth potentials, space needs, and locational preferences, these factors provide the basis for forecasts of future business activities in the area under differing land use controls.

In defining the business activities for the study, the travel characteristics of each activity were also considered. The final business activities chosen exhibit similarities in both type of space and in travel patterns. This allows for a more precise assessment of future transportation impacts of the project than SIC classifications.

/2/ The methodology for estimating and forecasting existing and future employment and space use is explained in Volume 2, Appendices, pp. F.1-F.2, G.1-G.59, H.1-H.32.

/3/ Data sources for land use and employment forecasts included:
o Department of City Planning 1981/2 employer/employee surveys for the South of Market/Folsom area (SOM/F) and C-3 district;
o Department of City Planning C-3 District Land Use Inventory, 1981
o The Downtown Plan EIR, EE81.3, certified October 18, 1984.

III. ENVIRONMENTAL SETTING AND IMPACTS

A. ZONING, LAND USE AND EMPLOYMENT

o Department of City Planning South of Market Land Use Inventory, 1982
o The State Employment Development Department (EDD), citywide employment data for 1985.

Based on these data sources and employing the methodology used in the preparation of the Downtown Plan EIR, estimates for 1985 and forecasts of 2000 employment and space use were developed for the Department of City Planning by Recht Hausrath and Associates (RHA). Their analysis and results are presented in several documents which are available for public review as part of this file. These are: Recht Hausrath & Associates, Economic Analysis for the South of Market Rezoning Study, Working Papers I & II, February 28, 1985 and February 4, 1986, and Memoranda from Recht Hausrath & Associates to the Department of City Planning, May 23, 1986, July 2, 1986, and September 24, 1986. Land use information for the C-3 and SOM/F have been updated to account for changes that have occurred since the original inventories, reflecting projects completed and available for occupancy at the end of 1985.

- /4/ San Francisco Redevelopment Program, 1987 Fact Book, San Francisco Redevelopment Agency.
- /5/ San Francisco Redevelopment Program and San Francisco Department of City Planning. 82.35E Second Supplement - Yerba Buena Center EIR, certified January 3, 1983. This file also contains detailed environmental evaluation of the proposed convention center facilities for Central Blocks Two and Three.
- /6/ San Francisco Department of City Planning, July 9, 1987, Open Space, an Element of the Master Plan.
- /7/ The forecast increase in office employment is coincidentally equal to the forecast overall net increase in employment in the rezoning area. However, the net figure includes increases and decreases in other activities, and sub-groups of those activities. Increases in employment are not limited to office activities.

III. ENVIRONMENTAL SETTING AND IMPACTS

B. POPULATION AND HOUSING

B. POPULATION AND HOUSING

SETTING

The rezoning area currently houses approximately 8,000 residents in 4,000 dwelling units. Sixty percent of the area's housing stock was constructed prior to 1945, most of which was constructed during the decade immediately following the earthquake and fire of 1906. Most of the housing is in generally sound condition, having been inspected by the City's Building Inspection Department in 1968 and brought up to code the following year.

The area's housing is characterized by small units. According to the 1980 census 60% of the units are single room occupancy (SRO) units. Forty percent of the housing stock lack complete kitchen facilities. Seventy-five percent have 2 rooms or less. Less than 15% of the area's rental housing stock have two or more bedrooms./1/ This may be the result of the subdivision of flats and larger apartments during the World War II and post war housing crisis.

Household density relative to available space is much higher in the SOM than in the city as a whole. Nine percent of the units have more than 1.5 persons per room compared to only 4.7% for the city (suggesting a need for larger family units in the SOM)./1/

Most of the SOM housing are rental units. Less than three percent of the total SOM housing stock was owner-occupied in 1980. Ninety-six percent of rezoning area residents surveyed in 1984 were tenants. This is higher than the citywide figure of 66%./2/ A 1984 Department of City Planning housing inventory found a less than one percent vacancy rate, excluding these residential hotel units being held off the market. According to the Federal Home Loan Bank of San Francisco, the 1987 vacancy rate for all units in the City was 1.1%. For those zip codes encompassing the SOM rezoning area, the percentage was lower, less than 1%./3/ Housing economists generally consider a vacancy rate of four to seven percent necessary for a reasonably balanced

III. ENVIRONMENTAL SETTING AND IMPACTS

B. POPULATION AND HOUSING

and fluid housing market.

While SOM rents have been rising in the past few years, rent levels in the project area are considerably lower than those for the city as a whole. The median rent paid in the area in 1980 was about half the citywide rent level of \$455. Sixty-seven percent of the SOM population was paying less than \$299 per month in 1980, compared to 21.4% for the city as a whole. A recent sample survey of SOM residents conducted by the Department of City Planning (DCP) as part of this rezoning study indicated that 22% of the respondents paid less than \$150 per month in 1984, while 61% paid less than \$300 and 83% paid less than \$450 per month in rents. To some extent, these relatively low rates reflect the small size of units, many of which are without parking, rear yards or full kitchen and bathroom facilities./2/ The SOM remains a valuable source of low-cost housing for many of the city's low-income immigrants, service workers, and unemployed or under-employed residents, as well as a large but unknown number of artists living and working in industrial buildings.

III. ENVIRONMENTAL SETTING AND IMPACTS

B. POPULATION AND HOUSING

IMPACTS

Population and Housing Supply

There are recent trends which suggest that population and housing units in the SOM will decrease in the future. However, there are both contrasting trends and provisions of the proposed controls which could be expected to offset these declines. Therefore, for the reasons given below, the EIR analysis has assumed that population and housing units will remain relatively constant in the SOM over the forecast period.

Census data for those tracts which approximate the rezoning area showed a population decline of approximately 4.5% between 1970 and 1980. Housing units declined over the same period for these census tracts from approximately 6,900 to 4,800/1/. A review of the Department of City Planning Housing Information Series for 1981-1985 for the census tracts which approximate the rezoning area indicated a net loss of approximately 40 units over this period (excluding new construction in these census tracts which occurred in the adjacent YBC redevelopment area)./4/

However, census data from 1970 and 1980 show that there has been an increase in Asian immigrant households in the SOM, which generally have a higher number of persons per household than the current average. This could increase the area's population within the existing housing stock.

Also, the proposed SOM Plan and zoning controls contain new policies and Planning Code provisions which protect existing housing stock. The proposed controls generally expand the area of the SOM zoned for residential use and decrease the area within current commercial (C-3-S and C-M) and industrial (M-1 and M-2) zoning districts. Where these districts would be replaced by the RED, RSD and SLR districts, office use would be prohibited and commercial FAR reduced from the current range of 9.0-5.0 to 1, to 2.5 to 1 in the SLR, 1.8 to 1 in the RSD and 1.0 to 1 in the RED. (See Table 1) The proposed

III. ENVIRONMENTAL SETTING AND IMPACTS

B. POPULATION AND HOUSING

controls would also require conditional use authorization for conversion or demolition of any dwelling unit. These elements of the proposed rezoning would be likely to minimize or eliminate the current trend towards a continuing reduction in the area's stock of residential units.

The policies and recommended zoning controls of the SOM Plan also promote the construction of new dwelling units. Where housing is permitted under the proposed SOM controls, residential densities would be among the highest currently permitted under the Planning Code: one unit per 200 square feet of lot area (1:200) for the SLR and RSD districts; and 1:400 in the RED districts. South Park would retain the current permitted density of 1:600. While new housing would not be permitted in the SLI and SSO districts, there is little housing currently located in these areas, which are generally fully developed with industrial, commercial and office uses. It is unlikely therefore, that these areas would have provided opportunity sites for substantial development of new housing. Housing would be a principal permitted use in the SLR, RSD and RED districts. Where these districts replace C and M districts, the existing conditional use requirement for new residential units would be eliminated.

However, while the above referenced controls are likely to reverse the trend of declines in housing units in the SOM, substantial new housing construction is not expected within the SOM during the forecast period for several reasons. There is a general perception that the SOM is not a desirable residential location. There are recognized drawbacks in the SOM which would make housing development unlikely in the near term. Recent surveys of current and potential SOM residents cited concerns about, among other things, the threat of crime; presence of a transient population in parts of the SOM; insufficient parking near residential uses; a lack of open space in the area; inadequate trash collection and a need for rodent eradication./5/ Additionally, new housing opportunity sites are limited. While there is vacant space throughout the SOM, it is often located under elevated freeways or in industrial areas along abandoned rail rights-of-way. Therefore, the

III. ENVIRONMENTAL SETTING AND IMPACTS

B. POPULATION AND HOUSING

more desirable sites for new housing construction would often require demolition of existing structures which increases cost and creates potential controversy for approval of new building permits. For these reasons, it would be difficult to develop and market unsubsidized housing in the SOM, within the forecast period. While some in-fill development and minor increases in the housing stock could occur, substantial increases are unlikely.

Most new housing construction in the greater downtown through 2000 is expected to occur in areas surrounding the SOM, where plans have been approved or proposed for new high-density residential development, and which do not suffer from the publicly-perceived drawbacks of an SOM location. These locations include the Rincon Hill and Van Ness Avenue Plan areas, the Rincon Point South Beach and Yerba Buena Center redevelopment areas, and the Mission Bay Plan area. A total of up to 15,500 new housing units are proposed/encouraged for these areas. Most multi-unit residential construction that has occurred south of Market street recently, post-1980, has been constructed in redevelopment areas. Examples of recently completed housing projects include St. Francis Place, a 492 unit building with 81 low-moderate income units at Third and Folsom Streets, and 91 low-income units for the elderly at Clementina and Fourth Streets, both within YBC. Approximately 1,350 additional housing units were under construction in YBC and the Rincon Point/South Beach redevelopment areas as of January 1987./6/

Over time, development of new housing in these surrounding locations, along with new retail and general commercial development to support increasing residential and employee population, could lead to an improvement in the image of the SOM as a potential residential neighborhood. This could create future opportunities for new market rate housing construction within the SOM. However, this would not be expected to occur before development of those surrounding areas has been completed and occupied, beyond the year 2000 forecast period. Given the above factors, the analysis in this EIR has assumed that there would be no significant increase or decrease in population or housing in the rezoning area to the year 2000.

III. ENVIRONMENTAL SETTING AND IMPACTS

B. POPULATION AND HOUSING

Housing Market Impacts of Employment Growth

The Downtown Plan EIR describes the implications of employment growth for local and regional housing market conditions. Analyses of the amount and type of C-3 District employment growth forecast under the Downtown Plan, in the context of citywide (including the SOM) and regional employment growth, population growth, demographic trends, and housing market factors, provides the basis for the Downtown Plan EIR conclusions about how employment growth would affect likely future housing market conditions. The Residence Patterns and Housing section (Section IV.D) and Appendix I in the Downtown Plan EIR are summarized herein and incorporated by reference. Future development in the SOM under the SOM Plan, as part of the future cumulative greater downtown development, would contribute to these housing market impacts. However, by itself, growth in the San Francisco downtown and surrounding areas, including the SOM, would make only a small difference in the region's housing market overall. New employment in the SOM under the Plan would represent less than five percent of citywide employment in the year 2000. Given the project's minor relative share of San Francisco and regional total employment, the project could not, in itself, measurably affect housing market conditions.

Employment growth has implications for the housing market, although it is not the only factor affecting future housing market conditions. Other demand factors include: the age distribution of the population, household sizes and incomes, mobility and migration, and lifestyle preferences. The list of supply factors includes: land availability, local land use policies, construction costs, and the existing supply of housing. General economic conditions affecting housing finance are also important.

With employment growth in the greater downtown, more people would want to live in San Francisco. Some would pay more for housing in the City than they would in a more outlying location because they save on the time and costs of

III. ENVIRONMENTAL SETTING AND IMPACTS

B. POPULATION AND HOUSING

commuting. There would also be more households (both new and existing) with more income to pay for housing. These factors would add to an already strong demand for housing in the City.

At the same time, additional housing will be produced in San Francisco. There is expected to be a larger additions to housing supply relative to employment growth in the future than in the past. The private market is expected to be unable to supply much new housing that would be affordable to a large segment of the population, however. The difficulties in producing affordable housing arise from many factors and exist throughout the region. It is even more difficult to produce affordable housing in San Francisco because of the relatively higher costs for land and construction in the City compared to many other parts of the region.

Given these conditions, housing prices and rents in the City are expected to remain more costly relative to household incomes and to the costs of other goods and services than they were through the early 1970's. With employment growth in the downtown and surrounding areas there would be more downtown workers living in San Francisco. Some would have the resources to stimulate production of market-rate housing. Others would add to the competition for existing housing, particularly older rental and for-sale units, priced below the average for San Francisco housing. The result would be higher prices and rents for this type of housing.

Higher housing prices and rents would have implications both for those in the housing market and for existing residents. Some people would decide not to move into San Francisco, and some existing residents would move out of the City for more acceptable housing elsewhere, given the price. Many would continue to live in the City. Some of them would pay more for the same quality housing, and others would end up with lower quality housing; many would allocate a larger share of their resources for housing. More people would live together to share housing expenses, or more household members would have to contribute to housing expenses. Owners of existing units would

III. ENVIRONMENTAL SETTING AND IMPACTS

B. POPULATION AND HOUSING

benefit to the extent the values of their properties increased.

Generally, those households with fewer financial resources available to pay for housing (low and some moderate income households) would make the most sacrifices in these market conditions. They have less ability to compete for housing and fewer housing options. San Francisco is and will continue to be home to a large number of such persons: renters, younger persons, those holding entry level jobs, the elderly and others on fixed incomes, newly-arrived immigrants, as well as other poor and unemployed persons. It is more likely that many of these people would continue to live in the City, although in more crowded or less adequate housing, than move outside the City.

It cannot be expected that San Francisco will accommodate all of the households that would prefer to live in the City. This is explained by the City's role as the employment center for a large region, by the limited land for housing production, and by the relatively higher costs of constructing housing in San Francisco, compared to most suburban developments. Thus, with growth in the downtown and surrounding areas, the number of workers in the San Francisco downtown and surroundings living in the Bay area counties outside of San Francisco would increase. These workers would continue to represent relatively small shares of the employed population in these other counties, however. They would not require much larger shares of the region's housing in the future than they do now. The housing market impacts of growth in the downtown and vicinity are not uniform throughout the region, however. There would be more effects in San Francisco and nearby communities than in more outlying areas.

It should be noted, that the SOM Plan policies and implementing controls are conservation oriented. They are intended to preserve opportunities for existing business service and industrial uses in the area which might otherwise be displaced by higher-rent paying uses such as offices. To the extent the proposed controls allow existing businesses to remain in the area and moderate employment growth relative to existing controls, the Plan would

III. ENVIRONMENTAL SETTING AND IMPACTS

B. POPULATION AND HOUSING

reduce the extent of new housing demand generated by SOM-based employment. Additionally, the Plan promotes increased housing development in the SOM. As explained in the previous section, the controls are expected to preserve existing housing in the SOM, and lead to more housing development in the area in future years. This would also serve to minimize potential imbalances between housing demand generated by new SOM employees and future housing supply.

The Downtown Plan EIR assumed annual citywide housing increases from 1980 to 2000 in the range of 600-1,500 units per year, with a most likely scenario of 1,000 units per year. As noted in the prior section and the Land Use and Employment discussion, several major new housing opportunities sites are located adjacent to the SOM: Rincon Hill, Mission Bay, and the YBC and Rincon Point/South Beach redevelopment areas. High-density residential development is also promoted in the recently adopted Van Ness Avenue Plan. These housing developments would also help to reduce potential jobs/housing imbalances created by greater downtown employment growth.

As part of total regional employment growth, greater downtown and SOM employment growth would contribute, although marginally, to regional housing demand. A strong regional economy has and will continue to be a factor supporting a regional housing market with relatively high housing prices and rents.

NOTES - Population and Housing

- /1/ 1980 Census of Population and Housing, Census Tracts, San Francisco-Oakland, California, census tracts 176.01, 176.02, 178, 179.01 & 180.
- /2/ South of Market Housing, Transportation and Open Space Needs Survey Report, U.S. Human Resources Corporation, December 1984.
- /3/ Housing Vacancy Survey, San Francisco County, Federal Home Loan Bank of San Francisco, March 1987.

III. ENVIRONMENTAL SETTING AND IMPACTS
B. POPULATION AND HOUSING

- /4/ Department of City Planning, Housing Information Series, Changes in the San Francisco Housing Inventory, 1981-1982; 1983-1984 and 1985, data cited in the text includes census tracts 176.01, 176.02, 178, 179.01 & 180.
- /5/ South of Market Housing, Transportation and Open Space needs Survey Report, U.S. Human Resources Corporation, San Francisco, December 1984. Olympia and York, Preliminary Market Assessment, Housing Market Study Yerba Buena Gardens, July 1982.
- /6/ San Francisco Redevelopment Program, 1987 Fact Book, San Francisco Redevelopment Agency.

C. TRANSPORTATION AND CIRCULATION

SETTING

Introduction

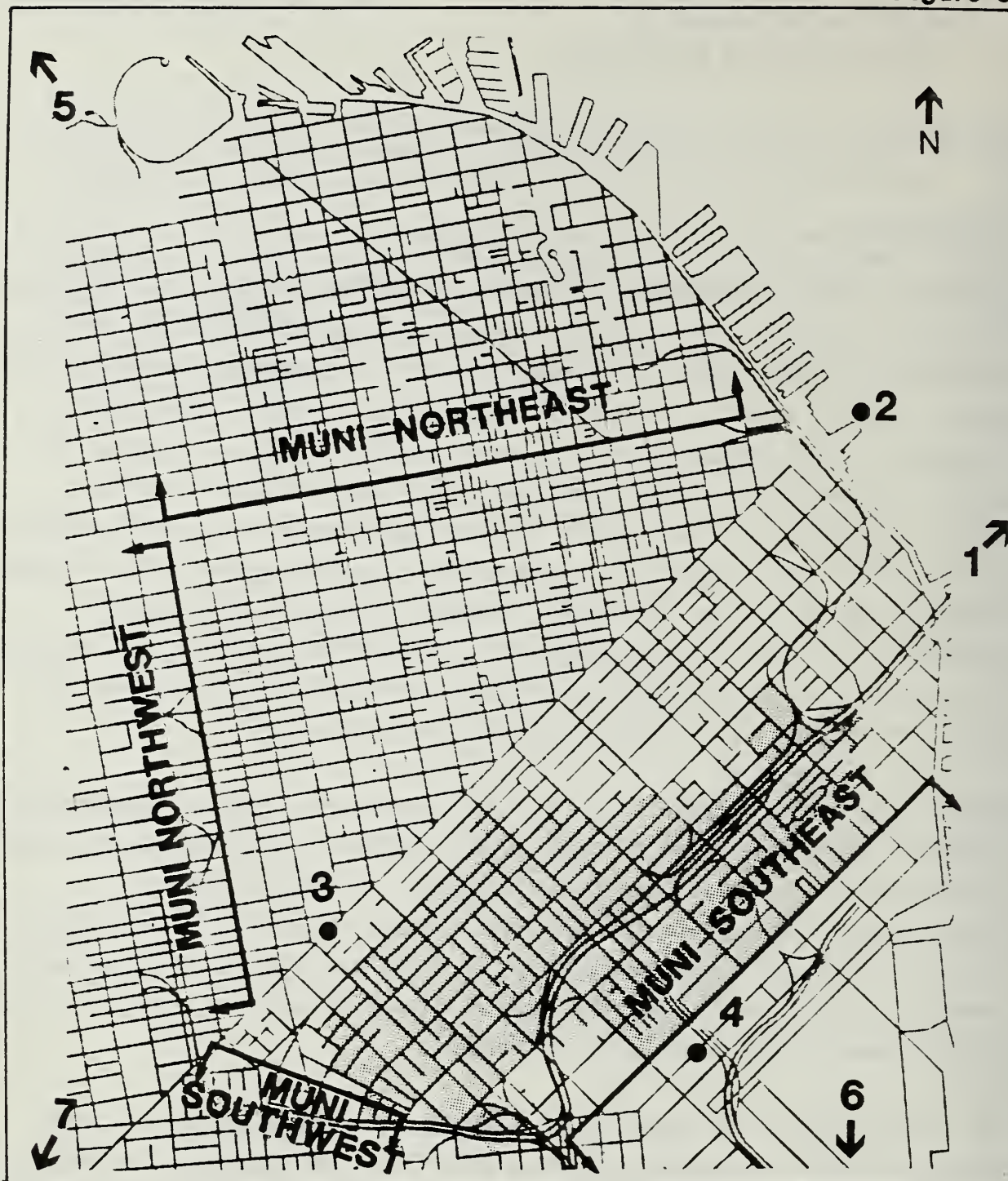
As a major center of commerce for the region and the most densely populated city, San Francisco and its downtown serve as a transportation hub with connections to residential and commercial centers throughout the region. The South of Market rezoning area, located immediately to the south of San Francisco's C-3 (Downtown) District, has excellent access to regional and local transportation systems. Regional transit service--rail, bus and ferry--is provided directly to the South of Market area or through connection with the San Francisco MUNI from seven of the nine Bay Area counties (Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara and Sonoma). Regional traffic access is provided from all Bay Area counties (including Napa and Sonoma) via the Bay Bridge to the east, the Golden Gate Bridge to the north, and Highway 101 and Interstate 280 from the south.

Because downtown San Francisco serves as a core of the regional transportation network, people travelling to and from the SOM must share the transportation system with people travelling to and from the C-3 District, and to destinations in other parts of San Francisco and the region. The analysis of transportation conditions generated by the proposed SOM Plan/rezoning must therefore assess the impacts of SOM-based travel in conjunction with regional travel demand on the transportation system.

The setting discussion that follows describes transit service, local and regional traffic circulation, parking conditions and pedestrian activity in the SOM area for 1984/5./1/. The local street system is shown in Figures 3 and 4, pages 31 and 32. The existing conditions are presented for both the P.M. peak hour (4:30 - 5:30 P.M.) and two-hour (4:00 - 6:00 P.M.) peak period, during which the heaviest travel demand on streets and freeways in San Francisco generally occurs /2/. The P.M. peak period represents the worst

Figure 9

(Note: Screenline illustrations are schematic in nature.)



LOCATION OF TRANSPORTATION SCREENLINES

 South Of Market Plan Area

- 1 TRANSBAY TUBE - Screenline for BART Transbay
BAY BRIDGE TOLL PLAZA - Screenline for AC Transit, and Route I-80 Vehicles
- 2 SAN FRANCISCO BAY - Screenline for Tiburon, Sausalito and Larkspur Ferries
- 3 WEST OF BART CIVIC CENTER STATION - Screenline for BART West bay
- 4 WEST OF CALTRAIN DEPOT - Screenline for Caltrain
- 5 GOLDEN GATE BRIDGE TOLL PLAZA - Screenline for Golden Gate Transit Buses, and Route U.S. 101 (North) Vehicles
- 6 SAN FRANCISCO COUNTY LINE - Screenline for SamTrans (Mainline Routes), and Route U.S. 101 (South) Vehicles
- 7 SAN FRANCISCO COUNTY LINE - Screenline for SamTrans (Daly City) and Route I-280 (South) Vehicles

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

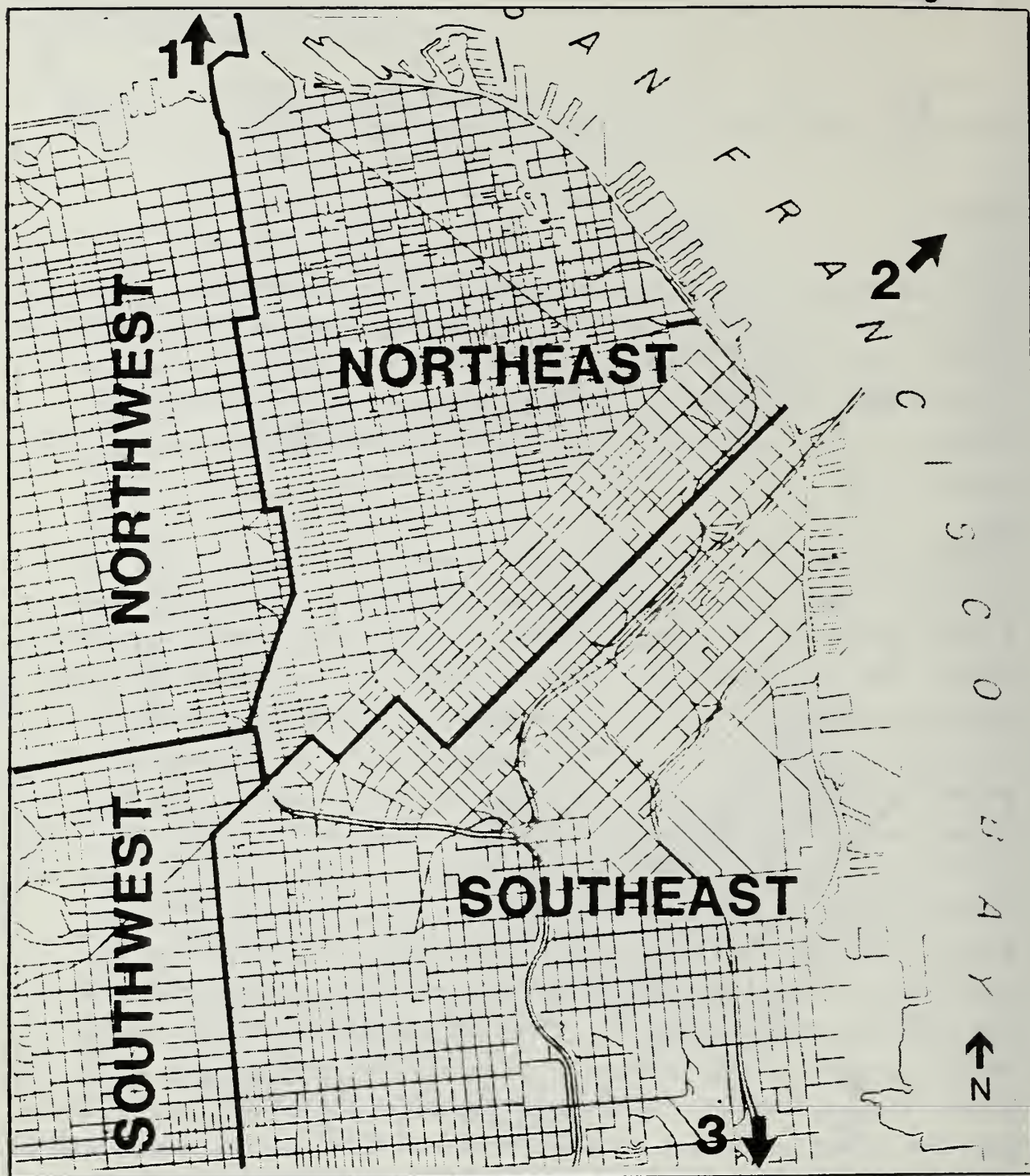
conditions on local streets, as it captures both peak commute travel and periods of substantial visitor travel to and from the city.

Transit

Local and regional transit agencies provide public transportation to the SOM either directly or through transfer from the San Francisco Municipal Railway (MUNI). Major transit terminals located in or near the SOM include the Southern Pacific Terminal at Fourth and Townsend Streets, the Transbay Terminal at First and Mission Streets, and the Ferry Building at the foot of Market Street.

The Bay Area Rapid Transit District (BART) provides transbay commuter rail service to Alameda and Contra Costa Counties via four Market Street Stations, located between Van Ness Avenue and the foot of Market. BART also provides westbay service to Daly City. Connections are provided to other Peninsula destinations via transfers to the San Mateo County Transit District (SamTrans) bus service. SamTrans also provides commuter service in the San Francisco downtown area, operating primarily on Mission Street, with service terminating at the Transbay Terminal and Moscone Center. The Alameda-Contra Costa Transit District (AC) provides transbay motor coach service to the East Bay from the Transbay Terminal. The Golden Gate Bridge, Highway and Transportation District (GGT) operates motor coach, subscription bus, and ferry service to San Francisco from Sonoma and Marin Counties. The regularly scheduled motor coach service primarily operates on the Sansome-Battery Streets couplet and Van Ness Avenue, serving both the Civic Center and downtown, with service out of the Transbay Terminal. Golden Gate Transit also provides stops at Fremont and First Street and Howard and Sixth Streets. Ferry service is provided to and from the Ferry Building at the foot of Market Street. Caltrain operates commuter rail service to the Peninsula from the Southern Pacific Terminal at Fourth and Townsend Streets. Independently owned and operated jitney service is provided along Mission Street.

Figure 10



SAN FRANCISCO AND REGIONAL TRAVEL ASSIGNMENT AREAS

- 1 - North Bay - Marin, Sonoma
- 2 - East Bay - Alameda, Contra Costa, Napa, Solano
- 3 - South Bay - San Mateo, Santa Clara

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

Figure 9 shows the location of the transit screenlines. Table 5, page 115, shows peak hour and peak period transit ridership in the setting year, 1984/5. Table 5 also shows the ratio of passengers to seats by transit carrier at the screenlines for the peak hour and two-hour peak period in 1984/5. The totals shown are sums over the peak hour and the two-hour peak period. Within the peak hour, there are periods of time when the loading ratios would be higher than the average values shown ("peak-of-the-peak" conditions). Individual transit vehicle loadings also vary on a day to day basis because of fluctuations in ridership (demand) and because of variations in operating conditions caused by traffic congestion, equipment availability, or system breakdowns.

The level of service (LOS) concept, similar to that developed for highway operations, has also been applied to bus transit and rail transit to evaluate system performance. Passengers per seat (i.e. total passengers divided by the number of seats) has been used to define the various level of service ranges./3/ Each transit agency has a stated service objective pertaining to desirable passenger per seat ratios for their system and type of service. Service objectives for agencies serving the greater downtown are as follows: MUNI - 1.25 (i.e. 1.25 persons per seat) for trolleys and motor coaches, 1.65 for articulated coaches and 2.0 for MUNI Metro (as discussed below); BART - approximately 1.5; AC Transit 1.25 for buses over each half hour period; Golden Gate buses 1.0; and SamTrans 1.0.

Passengers per seat ratios are only one measure of adequacy of service. The constraints of daily operation, including impediments caused by street traffic, may cause surface transit vehicle bunching, loss of running time and lack of schedule adherence which inevitably reduces service, reliability, and ultimately capacity. Such conditions would not be evident from simple quantitative analysis.

In addition to these inherent structural inefficiencies, there are other factors which affect the overall relationship between transit ridership and

III. ENVIRONMENTAL SETTING AND IMPACT

C. TRANSPORTATION & CIRCULATION

capacities. They include extreme variability in daily and seasonal ridership for which absolute capacity must be available, as well as service to transit riders who begin and end their trips outside the survey area. Daily fluctuations in fleet availability also affect system capacity.

It should be noted also that any local trip which remains internal to the area cordoned by the screenlines would not be counted. For example, travelers from the East or North Bay who arrive in the survey area, then transfer to local MUNI service to complete their trip, without crossing the screenlines while on MUNI, would not be counted as part of the MUNI ridership in any corridor.

As transit ridership is presented on a corridor basis, LOS on individual lines may vary above and below the corridor average. Further, policy considerations dictate operating conditions on certain lines where minimum headways have been established to maintain transit access to areas that is not warranted on the basis of ridership alone. Such lines may have LOS well below the corridor average. Therefore, when total ridership and capacity are averaged for a given corridor these figures may slightly distort overall ridership conditions.

The rail transit Level of Service scale, applicable to MUNI Metro, is based on typical light rail transit systems where total capacity is about 2.0 to 2.2 times seated capacity. MUNI Metro provides about 50% of the seated capacity at the Southwest screenline. Because Metro vehicles can accommodate higher loadings (2.0 passengers per seat) than buses or trolleys (1.5 passengers per seat), the Level of Service would be somewhat better than shown in Table 5. (While current Metro loadings, distinct from diesel or trolley coach loadings are available, an exact estimate of future Metro loadings, distinct from the corridor totals at the screenline is not possible. Therefore, an analysis of the Metro service, separate from the remainder of MUNI service to the Southwest, has not been completed for the base case. Such analysis would be beyond the ability of the travel demand analysis to accurately predict over time.)

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

It should be noted that MUNI routes have been aggregated on a corridor basis and thus total person trips on MUNI by corridor includes travel on some routes that serve more than one corridor. For example, most routes serving the Northeast also serve the Southeast. Similarly, but to a lesser extent, routes serving the Northeast serve the Northwest. Therefore, the capacities to the differing corridors are interdependent and cannot be assumed to increase or decrease in one corridor without affecting service to another, nor can MUNI ridership and capacity be summed over corridors to assess cumulative impacts as this would double count capacity of lines serving two areas.

During the P.M. peak hour in 1984/5, transit agencies were operating at Levels of Service (LOS) ranging from A to E. BART Transbay had an LOS of E./4/ MUNI had LOS D in all directions. All other carriers had LOS of C or better.

As with peak hour service, P.M. peak period conditions on transit in 1984/5 also ranged from LOS A to E, but overall operation was better than peak hour. MUNI LOS were D for all but the Southeast corridor which was C. BART Transbay remained at E through the peak period, but Westbay service improved from C (peak hour) to B (peak period). Golden Gate Ferry service was A in the peak period versus B in the peak hour. SamTrans service improved from C (peak hour) to B (peak period). All other carriers remained the same as peak-hour and were at LOS C or better.

Generally, there is capacity available on MUNI within the SOM. Loadings increase as these lines travel outbound from the SOM, and ridership peaks outside the rezoning area. Therefore, MUNI capacity is not generally a constraint on transfers to MUNI for travel within the SOM.

Traffic

The greater downtown area, including the SOM, is served by four major multi-lane freeways. Interstate 80 provides access to the East Bay via the San Francisco-Oakland Bay Bridge; US 101 provides access to the North Bay via

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

the Golden Gate Bridge; and US 101 and Interstate 280 provide access to the Southern Peninsula. Figure 9 page 97 shows the regional traffic screenlines. California State Route (SR) 480, the Embarcadero Freeway, serves the greater downtown and the Northeast portion of San Francisco as a distribution facility for traffic on I-80 and US 101. Freeway ramps connecting with I-80, US 101 and I-280 are located within the SOM and are accessible from local streets. Traffic originating in the greater downtown uses the ramps located in the SOM for access to the freeway system. Access to US 101 to the north is only available from local streets.

The analysis of traffic impacts has been conducted on two levels: regional and localized. The regional analysis considered impacts at the regional screenlines for vehicle traffic shown in Table 6, page 120. The localized analysis considered impacts at freeway ramps and selected intersections in the SOM. The travel demand process has been used to estimate the vehicular traffic component of survey area (SOM/F and C-3) travel. The modal split data has been used to assign person trip-ends (pte) to the vehicular modes. Vehicle trip-ends (vte) have been calculated by applying estimates of vehicle occupancy (persons per vehicle including the driver) developed from the Employee Survey data. The Drive Alone, Carpool, Vanpool and other (taxi, motorcycle and jitney) vehicle travel components are aggregated to determine the total number of vehicle trips, see Table 4, page 113.

Regional Traffic

Survey area contributions to travel at the regional screenlines are estimated directly from the transportation model. The non-survey area share of total vehicular traffic at the regional screenlines was estimated through data on regional employment and trip generation developed by MTC./5/ (Appendix C contains a detailed discussion of the process used to develop non-survey area travel.)

Total traffic demand at the regional screenlines in 1984/5 (shown in Table 6) ranged from about 90 to 100% of the available capacity on the Golden Gate and

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

Bay Bridges and US 101 during the P.M. peak hour and peak period. I-280 operates at approximately 60 to 65% of capacity at both times.

Peak hour freeway operating conditions were in Level of Service (LOS) F for The Bay Bridge, and LOS E for the Golden Gate Bridge and US 101. I-280 was operating at LOS B. Peak of the peak conditions within the peak hour would be expected to be worse than the average hourly conditions because of surges in demand.

During the peak period US 101 and the Bay Bridge were operating at LOS E; the Golden Gate Bridge was operating at LOS D; and I-280 remained at LOS B.

The two hour peak-period volumes on the Bay Bridge, Golden Gate Bridge and US 101 are sometimes equal to or more than twice the peak-hour volumes./6/ Part of this anomaly is likely attributable to the effects of temporary flow interruptions during high demand periods. Traffic flow approaching the Bay Bridge is sensitive to the concentration of merging vehicles and occasional interruptions caused by stalled vehicles and/or accidents. Slowdowns on the Bridge causes rapid deterioration of conditions on bridge approaches, feeder streets and freeways, thereby reducing the number of vehicles accessing the bridge during these periods. The Golden Gate Bridge operates under similar conditions and is also affected by congestion of the surface streets that approach the Bridge (Lombard Street and Doyle Drive).

US 101 and I-280 meet at a freeway-to-freeway interchange located between the downtown and the county line. Although this interchange is the major capacity constraint for the freeway system inside San Francisco, conditions have been analyzed at the county line in order to fully assess the contribution of survey area traffic to cumulative travel demand. Potential SOM and cumulative traffic demand would be undercounted if impacts were measured at the US 101/I-280 constraint point, due to the abundance of surface routes that allow traffic from the downtown to bypass this interchange. The downtown traffic destined for Peninsula locations that has by-passed the interchange is assumed

to have re-entered the freeways between the interchange and the county line, because there are few alternate outbound routes at that point.

Local Streets

Major streets in the SOM are generally wide (82 feet). Traffic in the SOM generally flows freely in the non-peak hours. In the peak hours, local streets in the SOM which do not serve as access to the freeway system continue to flow freely. As mentioned, during the evening peak commute period, total traffic demand can exceed the capacity of the freeway system, resulting in queuing at freeway ramps within the SOM and congestion at nearby intersections. As indicated in Table 6, SOM-based travel represents less than 10 percent of current regional freeway travel at the screenlines. Thus, to the extent there is traffic congestion on local SOM streets at freeway approaches, this is a primarily a function of high levels of outbound traffic generated from outside the SOM, primarily from the C-3 district.

The SOM contains many side streets which divide the large block configuration that prevails in the area. Traffic flow along these side streets is often obstructed by delivery trucks, stacked goods and illegally parked cars.

Eight intersections were selected for comparison of travel conditions between current and future years. These intersections were selected as the most critical in the South of Market area because they serve as major approaches to freeway ramps, are located near major trip activity centers (e.g. Transbay Terminal), or in the case of Third and Market record screenline activity for the study area. Each of these intersections is critical in terms of assessing the overall ability of the downtown area street network to accommodate increased growth.

Table 7, page 125, shows existing and projected traffic conditions at the selected intersections. As discussed above, the most congested traffic conditions in the SOM are centered on freeway entrance ramps during the P.M.

peak. The intersections of Brannan and Sixth Streets, First and Harrison Streets, and Fifth and Bryant Streets were all operating at LOS F (jammed conditions) during the P.M. peak hour in 1984/5. The Mission and Beale Streets intersection operated at Level of Service E (poor conditions). The Brannan and Sixth Streets intersection provides access to the only I-280 southbound on-ramp in the greater downtown area. As a result, literally all of the southbound traffic which accesses the I-280 extension in the downtown area has to pass through the intersection. Similarly, the intersection of First and Harrison Streets is the eastern-most surface on-ramp to the Bay Bridge and is subject to substantial congestion at the merge with the on-ramp from First and Essex Streets. Queues of vehicles are present on the approaches to both the First Street and Sixth Street ramps throughout the peak period.

Parking

The Department of City Planning has surveyed on and off-street parking demand and supply for the greater downtown area. The information is provided for three geographic areas: the SOM; the C-3 district, and the Rest of the south of Market area (SOMA) including Rincon Hill, South Beach and a portion of Showplace Square. In the SOM there are approximately 3,300 on-street and 9,400 off-street spaces. Occupancy for these spaces is approximately 92%. In the C-3 district there are approximately 2,500 on-street and 37,200 off-street space with an occupancy rate of 92%. The Rest of SOMA has approximately 2,750 on-street spaces and 2,950 off-street spaces. Occupancy is approximately 77%. Total parking supply for the surveyed area is 58,100, occupied at rate of approximately 91%. This occupancy rate of greater than 90% indicates that parking resources in the area are generally fully utilized.

As there is greater supply of off-street parking south of the C-3 district relative to employment than within the C-3 district, off-street parking is less expensive and more readily available. Therefore, many C-3 district commuters park within the greater south of Market area including Rincon Hill, the Rincon Point and South Beach redevelopment areas, and the SOM rezoning

area.

Parking demand in the SOM also includes demand from construction workers. The number of construction workers in the SOM varies both on a daily basis and on a seasonal basis. For 1984/5, there were an estimated 35 construction workers in the SOM on an average weekday./7/ Parking demand from construction workers is negligible relative to area-wide parking demand and would not noticeably affect parking occupancy ratios, although they would generate localized impacts.

The average hourly parking demand for SOM service vehicles in 1984/5 was about 300 equivalent daily spaces./8/ Some of this demand was accommodated in existing off-street loading areas; much of the demand was served curbside in loading spaces on side streets and major arterial streets throughout the SOM. Loading demand not served off-street or from curbside takes place from travel lanes which impedes traffic. This is particularly problematic on narrow side streets in the area, where one loading vehicle can effectively block all traffic.

Pedestrian Circulation

Much of the travel between land uses in the SOM is pedestrian. Table 4, page 113, (modal split table) indicates the number of pedestrian trips in the SOM. Although little commute travel is walk travel as the primary-mode, virtually all work-related travel becomes pedestrian travel as employees walk between their primary commute modes and their workplace. Non-work travel is substantially pedestrian, as shown in Table 4.

Three locations were selected as representative intersections to measure pedestrian activity in the SOM: Ninth and Folsom Streets; Second and Folsom Streets; and Fourth and Townsend Streets. Pedestrian counts were taken at these intersections during the evening peak period, from 4-6 p.m. The 2nd & Folsom and 9th & Folsom locations were selected because they fall on streets

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

that have been identified as pedestrian corridors in the South of Market Plan. The location at 4th & Townsend was selected because it is the focal point for pedestrian access to the Caltrain station and is probably the most heavily used pedestrian intersection in the SOM survey area.

Although pedestrian volume data (i.e. pedestrians per hour) can be used to show differences between locations, volume data are not accurate indicators of sidewalk operating conditions. Therefore, the level of service concept, similar to that used to describe operating conditions on vehicular facilities, has been used to analyze pedestrian flows in relation to sidewalk capacities.

Pedestrian Levels of Service are explained in Table 9, Appendix C. Rather than letter designations, the pedestrian LOS system uses descriptors ranging, in increasing order of severity, from "open" to "jammed". Pedestrian levels of service at the selected locations in 1984/5 were all open or unimpeded but for the west crossing at Townsend Street which was impeded.

IMPACTS

Introduction

The transportation analysis for the South of Market applies the methodological techniques developed for the cumulative analysis of transportation impacts in the Downtown Plan EIR./9/ The product is a comprehensive analysis of the impacts on the transportation system due to growth in the SOM, C-3 District and other parts of San Francisco and the region.

The synopsis immediately below highlights the means by which the transportation analysis was performed. It is presented for the purposes of establishing a base of understanding of what is included in the forecasts of cumulative travel impacts, and the extent to which travel generated by the SOM Plan would contribute to that total.

The transportation analysis produces travel demand projections associated with the SOM Plan in the year 2000. However, in order to assess SOM-based travel in an appropriate context, the transportation analysis must also account for travel generated by activities in the downtown district, and the rest of the city and Bay Area region. Though not separately presented, this analysis takes into account transportation impacts associated with the development of Mission Bay, located immediately south of the SOM Plan area.

The travel projections presented in this analysis are therefore based on a number of sources of information. Surveys of employees in the C-3 (Downtown) Districts and the SOM area provided detailed information on employee travel behavior. Additional surveys had been administered providing visitor travel data in those areas, and were supplemented by visitor trip information from the Metropolitan Transportation Commission (MTC). From these information sources, detailed estimates of 1984/5 travel from the survey area were calculated. These results were then compared against known (measured) travel demand at the selected screenlines. Metropolitan Transportation Commission

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

data provided a basis for estimating the share of total travel at the screenlines attributable to the SOM survey area, and the share attributable to regional or through travel. The preliminary travel estimates were then adjusted or calibrated with the known travel data until the calculated travel demand replicated measured travel data at the screenlines.

Year 2000 travel demand estimates for the survey area were then derived by applying the calibrated 1985 travel behavior characteristics to forecasts of employment. As part of the information on future employees, forecasts were also provided on where they would live within the region; this "residence pattern" information provided the basis for distributing travel to different geographic travel corridors within the City and the region.

For regional travel, year 2000 impacts were estimated based on growth factors developed by the Metropolitan Transportation Commission (MTC), applied to estimates of regional travel at the screenlines in 1984/5.

The initial estimates of cumulative travel demand at the screenlines in year 2000 were then compared to the travel capacity for each transportation system assumed to be available in 2000. Where the preliminary estimates of travel demand exceeded available capacity of a given mode in a given corridor, adjustments were made to assumptions of travel behavior either for mode or time of travel. For example, if unadjusted estimates of traffic demand in a corridor could not be accommodated in the P.M. peak period analyzed, some portion of that travel demand would have to occur in different modes (shifting from single-occupant automobiles to transit or ridesharing). These adjustments were made to establish a reasonable scenario of travel behavior based on the capacity constraints of the system in 2000.

SOM-based travel is one component of this cumulative travel demand. The SOM Plan share of cumulative travel is indicated in each of the tables below, which present total travel demand by mode at the selected screenlines. It should be noted that the SOM share represents total travel demand from all

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

employees and residents the SOM area in the future year; the tables do not present the increment of travel attributable to changes in employment and population estimated to occur in the SOM between 1984/5 and 2000. (Table 4, however, does present the changes in SOM-based travel by mode between 1984/5 and 2000.)/10/

Travel Demand Analysis

Projected travel demand and trip distribution is based on forecasts of employment and residence patterns for the year 2000 in the survey area; for the non-survey area projections of travel demand and trip distribution are based on regional travel forecasts provided by MTC./5/ As explained in the introduction to the transportation analysis, page 42, the travel forecasting methodology involves two main sets of calculation. The initial "unadjusted" assignment assumes no changes in travel patterns from those that occurred in 1985. The final "adjusted" assignment takes into account transit capacity increases that are assumed to be in place by 2000, as provided by the various transportation agencies. The adjusted assignment also accounts for the effects on travel patterns of projected points of congestion on the regional freeway system serving San Francisco.

There are no roadway capacity increases assumed in 2000 for either the Golden Gate or Bay Bridges, or segments of the freeways immediately serving San Francisco. As a result, the initial unadjusted projections yield vehicle demand that exceeds available capacity. The final adjusted assignment incorporated shifts in travel from auto to transit carriers (or ridesharing) serving the same travel corridors. These modal shifts are made on the basis of whether sufficient transit capacity is available, and whether the destinations of the auto trips could also be served by the transit carriers to which they are shifted. In certain instances, the assumed capacity increases were not sufficient to meet all potential modal shift demand in a given corridor. In those cases, the excess travel demand has been identified as excess vehicle demand. The additional transit capacity that would be needed

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

to accommodate this demand within the peak period is identified and included in the transportation mitigation section on page 182.

The transportation analysis does not assume any change in travel behavior based on the goals of the SOM Plan. To the extent these policies are effectively implemented these would mitigate the impacts presented below (see the Mitigations Section).

Table 4 shows travel demand by mode emanating from the SOM rezoning area in 1984/5 and 2000 during the P.M. peak period and peak hour under the proposed Plan, and the percentage change in SOM travel demand over that period. P.M. peak-period travel from the SOM in the year 2000 would be about 33,500 pte. About 17,750 pte would occur in the peak hour. Peak-period travel in 2000 would represent an 23% increase over 1984/5. Peak hour travel would increase by 26% over 1984/5.

The following transportation analyses evaluate cumulative travel demand at the regional freeway and transit screenlines, and local transit (MUNI) screenlines shown in Figure 9, page 97. In order to draw conclusions about overall future operating conditions of the transportation system serving San Francisco, the analysis must incorporate such a cumulative perspective. Projected travel demand generated from the SOM rezoning area would represent one component of the cumulative demand. Therefore, the tables below present cumulative travel demand projections, and estimates of the proportion of that demand attributable to the SOM rezoning area under the proposed policies of the SOM Plan.

Transit

For purposes of this analysis, each transit system's capacity has been assumed to increase between 1984/5 and 2000 based on the Five-Year Plan of each agency and additional improvements were identified by the individual transit operators for the year 2000. (See Appendix C for a description of the

TABLE 4: SOM TOTAL AVERAGE P.M. PEAK-HOUR AND PEAK PERIOD PERSON TRIP-ENDS (PTE)
BY MODE, 1985 AND 2000

Primary Mode of Travel	1984/5 pte/a/				2000 pte/a/				% Change	
					SOM PLAN				1984/5-2000	
	WORK	NON-WORK	TOTAL	MODE%	WORK	NON-WORK	TOTAL	MODE%	WORK	NON-WORK
P.M. Peak Hour										
Drive Alone	3,780	1,930	5,710	40.4	4,200	2,270	6,470	36.4	9.7	28.5
Carpool	1,270	2,050	3,320	23.5	1,690	2,420	4,110	23.1	11.9	29.8
Vanpool	50	0	50	.3	110	0	110	.6	59.4	0.0
MUNI	1,660	730	2,400	16.9	1,950	870	2,810	15.8	21.3	21.5
BART	880	70	950	6.7	1,570	80	1,650	9.3	12.8	25.2
AC Transit	190	0	190	1.3	400	0	400	2.2	75.7	23.6
Sam Trans	40	0	40	.3	60	0	60	.3	64.8	21.5
Charter/Club Bus	50	0	50	.4	100	0	100	.6	33.6	21.5
CalTrain (SPRR)	160	0	160	1.1	300	0	300	1.7	53.5	0.0
GGT Bus	150	0	150	1.1	400	0	400	2.2	42.0	21.5
GGT Ferry	50	0	50	.3	60	0	60	.3	71.7	21.5
Tiburon Ferry	0	0	0	0.0	0	0	0	0.0	32.8	21.5
Bicycle	50	150	200	1.4	50	180	230	1.3	32.8	0.0
walk(b)	200	620	820	5.8	240	730	970	5.4	27.8	22.3
Other	50	0	50	0.4	90	0	90	0.5	10.1	41.3
TOTALS	8,580	5,550	14,140	100.0	11,220	6,550	17,760	100.0	30.4	25.6
P.M. Peak Period										
Drive Alone	5,400	5,180	10,580	38.8	5,840	6,010	11,850	35.4	8.7	26.8
Carpool	1,790	5,500	7,300	26.7	2,250	6,390	8,640	25.8	9.6	27.7
Vanpool	110	0	110	.4	260	0	260	.8	59.0	0.0
MUNI	2,150	1,970	4,120	15.1	2,460	2,290	4,750	14.2	17.9	21.2
BART	1,360	200	1,560	5.7	2,550	230	2,780	8.3	12.2	24.2
AC Transit	280	0	280	1.0	610	0	610	1.8	77.7	22.9
Sam Trans	90	0	90	.3	180	0	180	.6	65.2	21.2
Charter/Club Bus	80	0	80	.3	190	0	190	.6	44.0	21.2
CalTrain (SPRR)	230	0	230	.9	410	0	410	1.2	61.4	0.0
GGT Bus	320	0	320	1.2	680	0	680	2.0	42.1	21.2
GGT Ferry	70	0	70	.2	100	0	100	.3	81.4	21.2
Tiburon Ferry	0	0	0	0.0	10	0	10	0.0	37.4	21.2
Bicycle	90	400	500	1.8	90	470	560	1.7	37.2	0.0
walk/b/	330	1,670	2,000	7.3	390	1,940	2,330	7.0	28.1	21.9
Other	50	0	50	0.2	90	0	90	0.4	10.6	35.2
TOTALS	12,360	14,920	27,290	100.0	16,110	17,330	33,470	100.0	30.5	24.1

/a/ Includes all travel with origin or destination in the SOM rezoning area, both outbound and inbound at times shown. Total pte are slightly overstated as trips internal to the survey area are double-counted. This table cannot be used to replicate SOM-based travel at the screenlines which includes outbound travel only, and which adjusts travel at the screenlines for trips which terminate prior to crossing the applicable screenline.

/b/ Exclusive pedestrian travel; does not include other pedestrian travel made in conjunction with other modes.

SOURCE: Department of City Planning

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

capacity increases assumed for each transit carrier.) The future peak hour and peak period transit loadings shown in Table 5 page 115, are based on these assumed capacity increases.

The SOM Plan calls for expanded local transit service in the SOM to link the area to the downtown and regional transit facilities and the rest of the city. Proposed implementing actions to achieve those goals include:

- Construct the MUNI Metro extension to Mission Bay and possibly Showplace Square at Seventh and Channel Streets
- Examine a possible extension of MUNI Metro to the Van Ness/Civic Center area from the proposed Showplace extension.
- Examine possible new local transit lines in the north-south direction between Fifth and Eighth Streets.
- Increase service frequencies of all MUNI lines to the South of Market area, especially in the morning, evening and nighttime commute peak periods of SOM workers.

Other than the MUNI Metro extension, these implementing actions have not been assumed to occur in the forecast period. The recommendations are considered to be mitigations which are discussed in the Mitigations Section.

Plans for the relocation of the CalTrain terminal at Fourth and Townsend Streets to either the TransBay Terminal or to Seventh and Channel Streets have been the subject of discussion among Caltrans, MTC and other responsible State and local agencies. However, due to overlapping jurisdictional issues, there is no committed funding for the station relocation from responsible local, regional and state transit agencies, pending further study of relocation costs and resolution of future CalTrain operational issues. Therefore, no change in the station location has been assumed in this EIR analysis./11/

Table 5 presents cumulative transit demand at the screenlines in 1984/5 and 2000 by carrier for the peak hour and peak period under the SOM Plan, and the estimated share generated by SOM rezoning area travel. With the exception of the MUNI southeast corridor, SOM-based travel would represent less than 10% of

TABLE 5: CUMULATIVE OUTBOUND P.M. PEAK HOUR & PEAK PERIOD TRANSIT RIDERSHIP, PASSENGERS PER SEAT RATIOS (P/S) AND LEVELS OF SERVICE (LOS)/a/ AT SCREENLINES, 1985 & 2000

Transit Agency	1985 pte					2000 pte/a,d/				
	Demand/c/	Seats	P/S	LOS	SOM%	Demand/c/	Seats	P/S	LOS	SOM%
<u>P.M. Peak Hour</u>										
MUNI/e/ NE	7,400	6,300	1.2	D	3%	8,300	7,000	1.2	D	4%
NW	8,600	7,000	1.2	D	2%	9,400	7,700	1.2	D	2%
SE	5,400	5,200	1.0	D	15%	6,400	5,700	1.1	D	14%
SW	11,900	10,900	1.1	D	5%	13,000	13,200	1.0	C	5%
BART EASTBAY	14,700	10,000	1.5	D	4%	27,100	18,000	1.5	F	4%
BART WESTBAY	6,800	7,400	.9	E	4%	8,000	9,000	.9	C	5%
AC Transit	7,800	9,200	.8	C	3%	12,300	9,700	1.3	E	3%
SamTrans/f/	1,600	1,900	.8	C	0%	2,000	3,700	.5	B	5%
Caltrain(SPRR)	2,700	4,700	.6	C	7%	3,700	4,600	.8	C	8%
GGT Bus	3,800	5,500	.7	B	5%	6,000	7,200	.8	C	7%
GGT Ferry/f/	900	1,400	.6	B	0%	1,100	1,900	.6	B	9%
Tiburon Ferry/f/	200	900	.2	B	0%	200	900	.2	A	0%
<u>P.M. Peak Period</u>										
MUNI/e/ NE	13,200	10,900	1.2	D	3%	14,700	12,100	1.2	D	3%
NW	13,400	12,000	1.1	D	1%	14,900	13,300	1.1	D	2%
SE	9,000	9,100	1.0	D	12%	10,200	10,000	1.0	D	13%
SW	21,000	18,700	1.1	C	4%	22,900	22,700	1.0	D	4%
BART EASTBAY	25,600	18,600	1.4	D	4%	47,700	30,900	1.5	F	4%
BART WESTBAY	11,000	15,500	.7	E	4%	13,000	18,000	.7	B	4%
AC Transit	11,600	13,800	.8	B	3%	18,400	14,700	1.2	D	3%
SamTrans	1,900	2,600	.7	C	5%	2,600	5,100	.5	B	8%
Caltrain(SPRR)	3,500	6,400	.5	B	6%	4,700	6,900	.7	B	4%
GGT Bus	5,600	8,500	.7	B	5%	9,300	11,100	.8	C	8%
GGT Ferry	1,000	2,300	.4	B	10%	1,300	3,200	.4	A	8%
Tiburon Ferry/f/	300	1,400	.2	A	0%	400	1,400	.3	A	0%

/a/ See Appendix for descriptions of Levels of Service for bus transit.

/b/ The values in this table are calculated on the basis of the South of Market Plan's goals regarding increased transit service availability not being met. If the Plan's goals are achieved, transit passengers per seat ratios and LOS would improve over those shown above.

/c/ Demand includes all transit riders crossing the screenlines shown in Figure 9.

/d/ The year 2000 includes improvements (increases in the number of seats) scheduled to occur during the Five-Year Plan cycles for each agency and specified additional capacity increases.

/e/ MUNI ridership cannot be summed over the corridors to give total system demand. Such a sum would incorrectly double count capacity on routes that serve more than one corridor (see text for more discussion).

/f/ Assigned SOM travel less than 50 therefore rounded to 0.

SOURCE: Department of City Planning

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

total travel in all corridors./12/ Generally, LOS would worsen, or remain comparable to 1984/5 conditions. Peak hour and peak period transit passengers per seat ratios in 2000 would range from A to F.

The LOS presented in Table 5 are standardized scales based on passenger per seat ratios (p/s) for bus transit. Since the capacity of different types of vehicles relative to the number of seats may vary, the generalized values presented in the tables may distort the relative crowding in each corridor depending on the type of vehicle used. (For example, a MUNI Metro vehicle is designed to carry many more standees than either a diesel bus or trolley coach. Thus a bus or coach would be more crowded than a Metro vehicle at the same p/s ratio.) Another measure of transit service is the stated service objective of each transit agency which is based on a target p/s ratio. These vary by transit agency and reflect the type of vehicles used by each carrier. Service objectives may also vary based upon the nature of the transit routes. For example, Golden Gate Transit and SamTrans have a p/s target of 1.0 p/s for most inter-city commuter routes (Sam Trans has a 1.2 p/s for non-express inter-city routes). As a result of the longer average distance travelled per passenger for these inter-city commuter routes compared to an intra-city carriers such as MUNI, these agencies consider it necessary to provide each passenger with a seat in order to effectively compete with the alternative of commuting by automobile. Alternatively, MUNI p/s standard reflects the acceptability of carrying relatively more standees than inter-city carriers due to the shorter distances of the average MUNI trip. In addition to the generalized LOS shown in Table 5, the discussion below examines each carrier's performance relative to their stated service objective.

It should be noted that MUNI has been moving towards a greater proportion of articulated buses and trolley coaches in the makeup of its fleet. These vehicles can accommodate a higher p/s ratio than conventional diesel buses and coaches at the same level of rider comfort. While MUNI considers 1.25 the desired p/s for conventional vehicles, the target p/s for articulated vehicles is 1.65. Thus, as the percentage of articulated vehicles in the total MUNI fleet increases, relative rider comfort at the same p/s ratio also increases.

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

The discussion below compares projected ridership to the current target of 1.25 p/s. This presents a conservative scenario regarding future LOS, as these are based on an LOS calculation which assumes standard vehicle capacities.

In the peak period, MUNI service to the northeast, northwest and southwest corridors would remain at the current LOS D. MUNI southeast service would deteriorate from C to D. MUNI would achieve its targeted average passenger per seat (p/s) ratios of 1.25 p/s in all corridors.

In the peak hour, MUNI service in the northeast, northwest and southwest corridors would remain at the current LOS D. Service to the southwest would improve to LOS C with the addition of significant capacity on the MUNI Metro as a result of completion of the MUNI Metro turnaround at the foot of Market Street. (By reducing delays caused by the current configuration of the Metro Embarcadero station, the capacity of Metro service would be effectively increased for any given number of vehicles in the fleet.) P/S ratios would remain below 1.25 in all corridors.

For peak period service in the East Bay corridor, BART Transbay would deteriorate from the current LOS E to LOS F. Transbay service would approximate the service objective of 1.5 p/s. (The scales presented in the table are based on typical bus capacities and thus indicate an LOS of F for BART rail service even though BART's service objective is essentially achieved, with a forecast p/s of 1.54. The value of 1.5 p/s reflects rounding to the nearest tenth./4/) AC Transit service would deteriorate from C to D. The service objective of 1.25 p/s would be achieved.

During the peak hour BART Transbay service would be LOS F. As with the peak period, ridership demand Transbay would approximate the service objective of 1.5 p/s. BART peak hour service Transbay would be slightly better than the peak period, reflecting a marginally higher concentration of capacity relative to demand within the peak hour. AC Transit service would change from LOS C to

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

E. P/S would be 1.3 in the peak hour, which would not meet the stated service objective of 1.25 p/s.

All transit carriers serving the South Bay would meet their service objectives in the peak period and the peak hour and provide at least one seat per passenger. BART westbay service would be LOS B during the peak period. SamTrans and CalTrain would operate at LOS B.

In the peak hour, BART Westbay service would remain at the current LOS C. CalTrain LOS would decline from LOS B to LOS C. SamTrans service would improve from the current LOS C to LOS B. P/S ratios on these carriers would range from 0.5 to 0.9.

In the North Bay corridor, transit and ferry service would also meet carriers' service objectives and provide one seat per passenger in both the peak period and peak hour. During the peak period, Golden Gate Bus service would decline from the current LOS B to LOS C. Golden Gate and Tiburon Ferry service would remain at the current LOS of A.

In the peak hour, Golden Gate bus service would change from the current LOS B to LOS C. Golden Gate and Tiburon ferry service would remain at their current LOS of C and B, respectively.

Traffic

The SOM Plan includes policies which are intended to reduce automobile traffic in and around the SOM. As discussed in the Plan and in the project description of this EIR, most of these policies are recommendations for discouraging automobile commuting and encouraging transit travel and ridesharing. Generally, these policies and implementing actions are designed to alter commuters' travel behavior, not to change available street capacity. These actions were not considered in assessing current and future travel from the project area or the greater downtown.

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

The SOM Plan includes three recommended implementing actions with the potential to alleviate congestion. These measures were first proposed in the Downtown Plan and analyzed in the I-280 Transfer Concept Program EIR (84.384E/NLA, certified May 23, 1985). These are: removal of the Embarcadero Freeway from Beale Street to Broadway; removal of the stub end of the I-280 freeway to Sixth Street; and reconstruction of the Embarcadero surface roadway. The Embarcadero Freeway removal measure has not been assumed in the analysis nor has it been proposed as a mitigation measure, given recent voter disapproval of a ballot measure supporting the action. The stub-end of I-280 is planned for removal to Fifth Street, with a new on-ramp constructed at Fifth and King Streets; funding for both components is secured. This change and the proposed improvements to the Embarcadero Roadway have been assumed to be implemented for purposes of the traffic analysis below.

As discussed in the Setting, traffic impacts of the SOM Plan have been analyzed at two levels: at the regional screenlines; and locally at selected intersections and freeway ramps within and near the rezoning area. Traffic impacts have been assessed based on projected increases in vehicular travel demand derived from the transportation modeling process for the SOM and the rest of the survey area, and on MTC growth rates applied to all through travel./5/

Mode shifts of commuters from automobile to transit or ridesharing are based on capacity constraints of the highway network and available transit capacity. Survey area travel has been assumed to continue to shift from single-occupant auto use to transit and ridesharing, to the extent that these mode shifts can reasonably be accomplished given expected transit capacity.

Regional Traffic

Table 6 shows vehicular traffic in the P.M. peak period and peak hour at the regional screenlines and compares total vehicular demand to the capacity of

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

TABLE 6: OUTBOUND P.M. PEAK-HOUR AND PEAK-PERIOD TRAFFIC VOLUMES AND CAPACITIES
AT REGIONAL SCREENLINES/a/ UNDER THE SOUTH OF MARKET PLAN, 1985 & 2000

P.M. Pk Hr	1985					2000				
	Capacity/b/	Demand/b/	LOS	V/C	SOM%	Capacity	Demand	LOS	V/C	SOM%
Bay Bridge	9,700	9,700	F	1.00	8%	9,500	10,700	F	1.22	9%
GG Bridge	7,200	6,500	E	.90	8%	7,200	7,300	F	1.01	8%
US-101/c/	8,000	7,200	E	.90	6%	8,000	8,000	F	1.00	7%
I-280/c/	8,000	5,100	B	.64	9%	8,000	6,200	C	.77	9%
P.M. Peak Period										
Bay Bridge	19,400	18,900	E	.97	6%	19,400	23,200	F	1.19	6%
GG Bridge	14,400	12,800	D	.89	7%	14,400	14,400	F	1.00	6%
US-101 /c/	16,000	14,800	E	.92	6%	16,000	16,000	F	1.00	6%
I-280 /c/	16,000	9,900	B	.62	9%	16,000	11,800	C	.74	8%

/a/ See Figure 9, page 97 for screenline location.

/b/ Vehicles per hour for the peak hour, and vehicles per two hours for the peak period. Appendix C shows the relationship between volume-to-capacity ratios and Levels of Service for freeways.

/c/ US-101 and I-280 meet at a freeway-to-freeway interchange located between the downtown and the county line. Both of the freeways upstream of (preceding) the interchange have capacity conditions that are slightly different than at the county line. Because of geometric configurations in the interchange area, the lane capacity of the two freeways is 1,800 vehicles per hour per lane rather than 2,000 vehicles per hour per lane at the county line. Thus, the one-hour capacity of each four lane facility would be 7,200 vph. Although the capacity conditions upstream of the interchange would appear to present a worse case for analysis, conditions have been analyzed at the county line because of the abundance of surface routes that allow traffic from the downtown to bypass the US-101/I-280 interchange. The number of parallel surface routes available to downtown traffic diminishes substantially by the time the freeways cross the county line. The downtown traffic destined for Peninsula locations that may have by-passed the interchange has been assumed to have re-entered the freeways between the interchange and the county line.

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

the selected freeways and bridges. Peak period traffic to the North Bay corridor in the year 2000 would increase above existing volumes by 12% in the peak period and 13% in the peak hour. In the Peninsula corridor, demand would increase by 20% in the peak period and 21% in the peak hour. Traffic demand at the regional screenlines to the East Bay would increase by approximately 22% over 1984/5 demand in the peak-period and 21% in the peak-hour. SOM-based travel would represent five to eight percent of peak period travel at the screenlines, and four to six percent of peak hour travel.

As explained in the introduction to the Impacts section, in the North Bay and East Bay regional travel corridors, year 2000 traffic demand would be expected to exceed capacity based on unadjusted 1984/5 travel patterns. Given this roadway capacity constraint, it was assumed that vehicular traffic generated from work trips from the survey area would remain constant at 1984/5 levels in these corridors. In other words, increases in travel demand to these corridors generated by survey area work trips would have to be accommodated by increases in transit and ridesharing, with a corresponding decline in the percentage of travel in the drive alone mode. The assumption of shifts in mode for employees commuting from the survey area is based on the relatively greater availability of alternative travel modes, i.e. transit and ridesharing, for commuters from the survey area compared to other work and non-work regional travel.

In order for assigned vehicle trips for work trips from the survey area to the North Bay and East Bay to remain constant to 2000, the transit share for work trips in the North Bay were assumed to increase from 54% to 64% and from 68% to 80% for the East Bay, during the peak period. Average automobile occupancy was assumed to increase from 1.38 to 1.51 for North Bay work travel and from 2.16 to 2.37 for the East Bay. The traffic demand discussed below is based on these assumptions.

Non-work and through travel modes were assumed to remain constant, as these travellers have fewer alternatives to the private automobile mode than travel

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

from the survey area. Forecast increases in non-work traffic are derived from the transportation modelling process. Future increases in traffic from through travel were based on MTC growth rates for all traffic at the regional screenlines./5/

With the assumptions described above, demand on the Golden Gate Bridge is expected to equal capacity in the peak period, and slightly exceed capacity in the peak hour. The Golden Gate Bridge is forecast to operate at LOS F throughout the peak period.

East Bay traffic demand is expected to exceed capacity on the Bay Bridge in both the peak period and peak hour. The Bay Bridge would operate at LOS F throughout the peak period. Demand is expected to exceed capacity by approximately 2,200 vehicles in the peak hour and 3,800 vehicles in the peak period in 2000. This unmet peak period auto demand, indicates that regional traffic impacts on this corridor could not be accommodated within the peak period without changes in regional, non-work and non-survey area travel patterns. It was assumed that commuters would not shift further to transit or ridesharing without further increases in transit, and an HOV network of lanes and by-passes. It is possible that, in response to such projected levels of congestion, people could move their residences closer to work, or change their jobs to reduce their commute time. It is also possible that economic growth would occur at lower levels than evaluated in this analysis in response to transportation constraints. Absent additional transportation capacity increases, the Bay Bridge would be at capacity beyond 4-6 P.M., extending for over 4 hours. Peak-of-the-peak conditions (i.e. jammed conditions with limited traffic movement) would extend over longer periods of time than currently and an increasing number of motorists would experience delays during their commute.

In addition to an increase in the length of the peak period, this excess demand condition could have several other possible results. As general public awareness of this condition increases, drivers with the option to do so could travel at non-peak times, or take alternative routes. For example, the

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

Dumbarton and San Mateo Bridges provide an alternative to use of the Bay Bridge for travel between San Francisco and north San Mateo counties and the East Bay. The Golden Gate Bridge provides an alternative to the Bay Bridge for travel between San Francisco or the south bay and destinations in Napa and Solano Counties. These alternative routes may also experience periodic congestion, but conditions would be superior to those forecast for the Bay Bridge.

In response to the capacity constraint of the Bay Bridge, non-survey area travellers could also change modes from the drive alone mode to transit, where available, and/or increase vehicle occupancies through use of carpools and vanpools. However, there is little or no additional available transit capacity forecast in the East Bay corridor for 2000 to accommodate potential non-survey area mode shifts, given the future transit capacities used in this analysis. Estimated ridership in 2000 is projected to fully utilize the assumed transit capacity throughout the peak period. As mentioned, BART is projected to operate at LOS F to the East Bay throughout the peak period. AC transit is expected to operate at LOS D and E in the peak period and peak hour, respectively. Both systems are expected to operate at the margin of their stated service objectives. Forecast travel demand could not be accommodated within the peak period in this corridor without an increase in system capacity through provision of additional transit and/or expansion of bridge capacity, or indirectly through an increase in vehicle occupancies, beyond the levels assumed in this analysis.

In the South Bay corridor, the traffic estimates for 2000 indicate an unbalanced demand between the two freeway facilities with Highway 101 at 110 percent of capacity and I-280 at only 74 percent of capacity. Total traffic demand would be approximately 92% of corridor capacity in the peak hour and 95% in the peak period. For the South Bay analysis, the additional trips on Highway 101 were assumed to shift outside of the peak two hour period, as it was estimated that there would be adequate room at the screenline to accommodate these trips during the peak three hour period (in the North Bay

and East Bay corridors there was not adequate capacity outside the peak two hour period to accommodate a temporal rather than a modal shift). As mentioned above, transit capacity is forecast to be available in this corridor through 2000.

Local Streets

Table 7 shows current and future volume/capacity ratios and LOS at the selected freeway ramps and intersections in and near the SOM Plan area. To assess future traffic conditions, projections of travel growth were made at each intersection. Primary growth factors were developed for each approach of the intersection based on travel growth projected within the SOM/F and C-3 survey area based on vehicular travel growth projected in the transportation model. Secondary growth factors were developed to account for the additional traffic that might pass through these South of Market intersections as a result of growth in Mission Bay and in the region. Both sets of growth factors were applied to the existing intersection counts to estimate future travel demand. (See Appendix C for a further discussion of traffic growth rates.)

It is expected that operating conditions on local SOM streets and intersections which do not serve as freeway ramp approaches will continue to be generally free flowing in both the peak and non peak hours in future years. Operating conditions during the peak-period and hour on the selected intersections which access freeway ramps would be expected to deteriorate. Of the intersections studied, all would be operating at LOS E or F except for Seventh and Harrison Streets which would be operating at an LOS of C. Three of these intersections currently operate at LOS F: First and Harrison; Fifth and Bryant; and Sixth and Brannan, while Mission and Beale operates at LOS E. The remaining intersections would change from the current LOS D or better to LOS E and F as mentioned above. Traffic at Sixth and Brannan is expected to remain unchanged. With the opening of the new I-280 on-ramp in the South of

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

TABLE 7: PEAK-HOUR VOLUME-TO-CAPACITY RATIOS (V/C) AND LEVELS OF SERVICES (LOS) AT SELECTED INTERSECTIONS UNDER THE SOUTH OF MARKET PLAN/a/ 1985 AND 2000

INTERSECTION	1985		2000	
	V/C	LOS	V/C	LOS
Third & Market	.79	C	1.00	F
Mission & Beale	.96	E	1.03	F
First & Mission	.85	D	1.11	F
First & Harrison	1.00	F	1.23	F
Fourth & Harrison	.71	C	.94	E
Seventh & Harrison	.56	A	.70	C
Fifth & Bryant	1.00	F	1.15	F
Sixth & Brannan	1.00	F	1.00	F/b/

/a/ SOM-generated traffic was not separately identified in intersection traffic counts. Future traffic volumes are based on growth factors for the SOM and C-3 districts, and secondary growth factors for other San Francisco and regional traffic that might impact these locations. The growth factors were then applied to total vehicle volumes at these intersections to estimate year 2000 conditions.

/b/ With the opening of the new ramp at 5th/King to I-280 traffic is assumed to equalize between the two ramps; 6th and Brannan is not forecast to experience new growth.

SOURCE: San Francisco Department of City Planning

Market, it is expected that I-280 southbound traffic would redistribute among the two ramps and service at Sixth and Brannan would not noticeably change.

In addition to total vehicle volumes, intersection operation in the SOM is affected by vehicle queues from adjacent freeway on-ramps. When the capacity of freeway ramps and the freeway proper are insufficient to process outbound traffic volumes, queuing results on surface streets. These queues may cause freeway-bound drivers at nearby intersections to wait through one or more signal cycles prior to entering the freeway. When this occurs, vehicle volumes passing through affected intersections vary from signal cycle to signal cycle and are less than capacity.

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

As a result of queueing at freeway ramps, local traffic operation at intersections upstream of these locations may be impaired. Local traffic sharing surface streets in the freeway-bound direction are directly affected by traffic back-ups from the freeway. Local traffic is also impacted by freeway-bound vehicles queueing into intersections thereby hindering cross-traffic through one or more signal cycles. This is the result of vehicles entering intersections when they are unable to exit within a given signal cycle. A 1987 change to the State Vehicle Code has provided police authority to issue traffic citations to drivers who are found blocking intersections when the signal has changed./13/ Continued enforcement of this law, and resultant education of the driving public, could reduce unnecessary deterioration in local, non-freeway bound traffic, caused by intersection blockages by outbound commuter traffic.

This increased congestion on surface streets and expansion of the peak travel period would similarly impact local transit service. Transit services operating on surface streets would be slowed by the congestion resulting in service delays.

Parking

The SOM Plan contains policy recommendations regarding parking which are intended to discourage automobile commuting and insure adequate parking and loading facilities for SOM residents, visitors and service vehicles. Recommended implementing actions contained in the SOM Plan include: setting parking rates to favor short-term parking; establishing preferential parking for residents; where necessary, increase curbside freight-loading space and improve enforcement to increase turnover; and requiring adequate off-street parking and loading in new residential and commercial development. The impacts analysis assumes that additional parking spaces would be provided in new projects, as explained below. Implementation of the remaining recommendations are not assumed in the analysis but included in the

Mitigations Chapter.

Parking demand for the SOM in the year 2000 has been calculated based on daily vehicle trips derived from the travel demand modelling process. The total daily parking demand includes the short-term demand as well as the long-term demand. A turnover rate is assumed for both work and non-work trips to account for multiple useage of individual parking spaces over the course of each day. These rates are applied to convert long and short term demand into equivalent daily parking spaces, to produce an estimated parking space demand that can be compared to existing and projected parking supply. The long-term demand is estimated on the basis of the total numbers of employees expected to drive in 2000. The calculated demand assumes an absentee rate of 0.88 which was derived from the employee surveys. It also assumes a turnover rate of 1.36 vehicles per space per day./14/ The short-term demand is based on the total number of non-work vehicular trips and assumes a turnover rate of 8, which assumes that short-term parkers stay in one location an average of 1.5 hours over a 12 hour day./14/

Table 8 shows existing and projected parking demand for the SOM, C-3 district and the rest of the South of Market area. An increase in parking supply of 1,900 spaces associated with new development and building conversions is estimated for the SOM rezoning area. The calculated demand to supply ratio for spaces within the SOM rezoning area is expected to increase from 92% to 103%, exceeding area supply. Parking supply in the C-3 district is not expected to change. The demand to supply ratio for C-3 district parking is expected to increase from 92% to 105%. Parking supply in the rest of the South of Market area is expected to increase by 4,250 spaces, resulting in a decrease of the parking occupancy rate in this area from 77% to 58%. The parking occupancy rate for the total area considered in the parking analysis would increase from 91% to 97%, an essentially full condition.

III. ENVIRONMENTAL SETTING AND IMPACT
C. TRANSPORTATION & CIRCULATION

TABLE 8: SOM AND DOWNTOWN VICINITY PARKING DEMAND AND SUPPLY 1985 and 2000

	1985				2000			
	SOM Plan Area	C-3	Rest of SOMA/a/	Total	SOM Plan Area	C-3	Rest of SOMA/a/	Total
PARKING DEMAND								
Long Term	7,170	22,450	2,630	32,250	8,660	24,200	3,830	36,690
Short Term	4,550	14,200	1,750	20,500	6,360	17,450	1,940	25,800
Total	11,720	36,650	4,380	52,750	15,020	41,650	5,770	62,490
PARKING SUPPLY								
Off-Street	9,400	37,200	2,950	49,550	9,400	37,200	2,950	49,550
On-Street	3,300	2,500	2,750	8,550	3,300	2,500	2,750	8,550
New Supply	-	-	-	-	1,900	0	4,250	6,150
Total	12,700	39,700	5,700	58,100	14,600	39,700	9,950	64,250
Occupancy	92%	92%	77%	91%	103%	105%	58%	97%

/a/ Rest of SOMA includes Rincon Hill, South Beach and Showplace Square.

The forecast excess demand for parking spaces in the SOM Plan area and the C-3 district could require that drivers to those area park at more distant locations from their destination than they do currently. This condition would cause parking rates to increase and could contribute to changes in transportation modes, away from drive alone and towards ridesharing and transit. The parking deficit could also increase the time needed for some travelers to those areas to locate parking and cause an accompanying increase in local traffic. However, this would be expected to apply primarily to short-term visitor travel rather than commuter travel and therefore not impact peak period traffic. (Employees who drive to work would not generally be searching for parking each work day, but rather parking at a location where they know space is available.) To the extent additional traffic is generated by parking deficits in the area, this effect would be localized and limited in

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

duration, associated with short-term parking demand at specific locations.

The proposed Mission Bay Plan area, immediately south of the SOM, is currently occupied by low-intensity industrial, warehouse and maritime-related uses, as well as considerable vacant space. Preliminary estimates indicate that, by 2000, Mission Bay could result in a parking deficit of approximately 150 spaces, thereby impacting parking resources in the adjacent SOM. This could increase competition for available parking resources in the SOM as Mission Bay travel, particularly that destined for the proposed commercial areas of Mission Bay north of the China Basin Channel, utilizes parking spaces near these employment centers. The result of this excess parking demand, should it occur, would be to exacerbate the conditions described above: increasing time needed to find parking in SOM area and/or requiring that individuals park further from their destination; increased parking rates; potential mode shifts away from drive alone to carpool and transit. Mission Bay is the subject of its own detailed environmental review, which includes an analysis of potential parking impacts, and the identification of mitigation measures as appropriate.

In addition to the demand generated by permanent employees and visitors, there would be an average of approximately 150 on-site construction jobs in the SOM area annually. Vehicle trips associated with these construction jobs would compete with other SOM vehicle travel for available parking on an intermittent basis.

Average hourly demand for service vehicles is estimated at 350 spaces in 2000./8/ Part of this demand may be accommodated at off-street loading facilities. Loading demand not served by available space would take space from travel lanes, intermittently inhibiting localized traffic flow. As mentioned, SOM streets are generally wide and traffic is generally free-flowing but for intersections serving freeways at peak commute hours.

On-street loading activity on major streets in the SOM would not be expected to substantially impede traffic. As mentioned in the setting, sidestreets are

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

often narrow and traffic flow currently restricted by illegally parked cars and stacked goods. At these locations, on-street loading activities can effectively block traffic flow. The proposed zoning controls implementing the SOM Plan would increase the off-street loading requirement applicable to commercial uses in the area. This would minimize the contribution of new uses to the existing loading and associated localized traffic problems in the SOM.

Pedestrian Circulation

The SOM Plan includes several recommendations designed to improve pedestrian circulation, convenience and safety. Recommended implementation measures include restoring the sidewalks in the South of Market as pedestrian circulation spaces by stricter enforcement of parking controls, creating an attractive pedestrian circulation and open space network throughout the SOM and creating new sidewalks, as appropriate, on abandoned rail rights-of-way.

These implementing actions of the Plan could improve or enhance pedestrian circulation at given locations. However, as no precise locations or programs are in place at this time the impact analysis below assumes no increases in sidewalk widths. The Plan's recommended implementing actions to improve pedestrian circulation are included in the Mitigation Section page 182.

Because of the trip linkage involved in much of pedestrian travel, (multiple stops or several person trip ends per person while in a given area) the travel demand process cannot accurately estimate changes in pedestrian travel over time for such a large area. Instead, the estimates of increased pedestrian travel were based on general changes in land use and employment in the vicinity of the locations studied. As mentioned, three intersections were selected to measure pedestrian activity in the SOM: Ninth and Folsom Streets; Second and Folsom Streets; and Fourth and Townsend Streets. Future conditions at these locations were estimated to remain open or unimpeded with the following exceptions: the west crossing at Second and Folsom Streets and the

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

south crossing at Fourth and Townsend Streets which would change from unimpeded to impeded; and the west crossing of Townsend Street at Fourth which would remain impeded. Pedestrian volumes at Fourth and Townsend Street and at Second and Folsom Streets would be expected to be heavier than the SOM average due to the presence of major generators-attractors of pedestrian activity at these locations: the CalTrain station at the Fourth and Townsend Streets, and the construction of a major office development at Second and Folsom Streets. These factors were taken into account in the analysis of pedestrian operations discussed below. Therefore, pedestrian conditions at these sites could be considered worst-case relative to the rest of the SOM. The open pedestrian conditions at Ninth and Folsom Streets can be considered more representative of general SOM pedestrian flow.

Generally, pedestrian volumes are not, in themselves, a source of constraint to pedestrian travel in the SOM. However, many specific sites throughout the SOM lack sidewalks, particularly within current and former industrial areas which had been serviced by rail freight. The lack of sidewalks at these sites makes pedestrian travel inconvenient and potentially hazardous. As mentioned, the SOM Plan proposes policies to improve pedestrian circulation which includes restoration of sidewalks. (See the Mitigation Chapter 183).

Independent of recommendations of the Plan, sidewalks may be constructed at specific sites as part of individual developments in the SOM. These new sidewalks may be included in development proposals by project sponsors, who anticipate that these site improvements would benefit their project. Major projects in the SOM and adjacent areas such as Showplace Square have routinely constructed sidewalks in conjunction with new developments. Alternatively, new sidewalk construction could be required as a condition of approval imposed as part of discretionary actions on projects such as conditional use authorization or discretionary review approvals.

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

NOTES - Transportation

- /1/ The setting data for the transportation section was gathered over a period of time beginning in 1984. The information presented in the setting section includes data gathered in both the latter half of 1984 and in 1985. No substantial changes in transportation conditions occurred over that time period. Therefore, the combined 1984/5 transportation setting "year" presents an appropriate description of setting conditions and provides a consistent bases for analyzing future year impacts.
- /2/ Travel demand is the total of individual one-way trips, or person trip ends (pte), which, when distributed to modes provides an estimate of the total demands placed upon a given transportation system.
- /3/ Transportation Research Board, Interim Materials on Highway Capacity, Circular 212, January 1980, pp. 73-114. See Table C-6, Appendix C, for description of Level of Service for bus transit. The following chart compares the Levels of Service for bus transit and light rail transit:

<u>Passengers per Seat</u>		
<u>Level of Service</u>	<u>Bus Transit</u>	<u>Rail Transit</u>
A	0.00 - 0.50	0.00 - 0.65
B	0.51 - 0.75	0.66 - 1.00
C	0.76 - 1.00	1.01 - 1.50
D	1.01 - 1.25	1.51 - 2.00
E	1.26 - 1.50	2.01 - 2.50
F	>1.50	>2.50

- /3/ SOM Visitor Survey administered by the Department of City Planning in September/October 1985. Embarcadero Center Survey conducted by Environmental Science Associates June 17, 1982. Both survey responses are on file and available for public review at the Office of Environmental Review, 450 McAllister Street, Sixth Floor.
- /4/ Although BART is a rail transit service, its cars have a unique seating configuration. The ratio of total capacity to seated capacity for a BART car is not identical to either the bus or rail transit standards given above. BART's target p/s ratio of 1.5, as compared to the range of 1.0 to 1.25 for Bay Area transit carrier's with bus fleets, suggests that BART LOS would be somewhat better than those for buses at the same p/s. Thus, BART capacity falls within the LOS ranges for bus and rail transit. For this individual carrier the agency's service objective is a more accurate indicator of operations than either of the above standard LOS measurements.

III. ENVIRONMENTAL SETTING AND IMPACT
C. TRANSPORTATION & CIRCULATION

- /5/ 1980 Regional Travel Characteristics, Working Paper 8, 1981 MTC Travel Survey, Metropolitan Transportation Commission (MTC), June 1983, and, 1980 Regional Travel Characteristics, Appendix 6.0, Working Paper 8, 1981 MTC Travel Summary MTC, October 1983.
- /6/ Ordinarily in transportation analysis the reference to peak hour (and peak period) of travel for any given mode is to the hour (or period) which has been measured to have the highest concentration of travel in that mode. For example, if the highest measured traffic volume on the Bay Bridge occurs between 4:15 and 5:15 P.M., then that is, by definition, the peak hour. Therefore, it would not be possible for the two-hour peak period to have more than twice the volumes of the peak hour. However, this EIR uses standardized peak time periods (4:30 to 5:30 PM-peak hour, and 4:00 to 6:00 PM-peak period) for all travel demand affecting the selected screenlines, based on the time period when the majority of outbound travel on all modes is occurring. This approach was used to better assess the transportation impacts of a broad planning area, as opposed to analysis of a site-specific development. Since the time periods in the analysis in this EIR are fixed, they do not necessarily correspond to the precise peak hour (or period) of travel demand for each mode at each location.
- /7/ The number of construction workers estimated to work within the SOM was derived as part of the overall employment and space estimates and forecasts prepared for this EIR. The forecasts of 1985 and 2000 employment and space use were developed for the Department of City Planning by Recht Hausrath and Associates (RHA). RHA present their analysis and results in several documents which are available for public review as part of this file. These are: Recht Hausrath & Associates, Economic Analysis for the South of Market Rezoning Study, Working Papers 1 & II, February 28, 1985 and February 4, 1986, and Memoranda from Recht Hausrath & Associates to the Department of City Planning, May 23, 1986, July 2, 1986, and September 24, 1986. These documents are on file and available for public review at the Office of Environmental Review, 450 McAllister Street, Sixth Floor.
- /8/ Wilbur Smith and Associates, Center City Pedestrian and Goods Movement Study, for the City and County of San Francisco, Department of City Planning, September 1981.
- /9/ The Downtown Plan EIR, EE.81.3, was certified October 18, 1984. For the SOM transportation analysis, additional regional employment and transportation data, produced by the Metropolitan Transportation Commission, became available after the transportation analysis in the Downtown Plan EIR was prepared. See footnote 5. This was used to refine the travel forecasts. The information has enabled a further calibration

III. ENVIRONMENTAL SETTING AND IMPACT C. TRANSPORTATION & CIRCULATION

of the relative share of survey area travel to total (cumulative/regional) travel at the selected screenlines than was possible at the time that the Downtown Plan EIR analysis was prepared. It also provided specific growth rates for future non-survey area travel by corridor, as estimated by MTC.

- /10/ Therefore, the impacts of the proposed rezoning represented by increases in SOM-based travel between 1984/5 and 2000 is a percentage of total SOM travel, which is itself only one component of cumulative travel. (For example, in year 2000, total SOM ridership on MUNI in the southeast corridor would represent about 14 percent of all riders during the peak hour. However, the number of riders attributed to employment growth under the SOM Plan between 1985 and 2000 (about 100 riders) would account for less than two percent of the total 14 percent SOM share.
- /11/ Caltrans has stated that relocation of the CalTrain terminal to the TransBay Terminal is a primary service objective. While relocation of the terminal to the downtown area has general support of local agencies, including the San Francisco Board of Supervisors and MTC, the California Transportation Committee (CTC) does not support the relocation at this time. A Joint Powers Board with representatives from San Francisco, San Mateo, and Santa Clara counties has authorized work to begin on an Environmental Impact Statement (EIS) which will examine alternatives for permanent station relocation.
- /12/ The higher rate of SOM-based travel at the southeast corridor is primarily because the southeast corridor screenline is located precisely at the SOM Plan area boundary. Therefore all SOM-based MUNI travel to the southeast corridor crosses the screenline, whereas in other corridors there is some distance between the nearest SOM Plan area boundary and the corridor screenline. As a result some portion of SOM-based travel to other corridors will disembark before being measured at the screenline, and travel from other areas will have embarked on MUNI, thereby reducing the relative share of SOM-based travel at these locations. Consequently, SOM-based travel represents a relatively higher share of MUNI ridership to the southeast than for any other corridor. See Appendix C for further discussion of screenline locations and their relationship to estimates of SOM-based travel).
- /13/ Section 22525, State Vehicle Code, The Anti-Gridlock Act of 1987.
- /14/ Institute of Traffic Engineers, Transportation and Traffic Engineering Handbook, Second Edition, 1982.

D. AIR QUALITY AND CLIMATE

SETTING

Air Quality

The Bay Area Air Quality Management District (BAAQMD) operates a regional monitoring network which measures the ambient concentrations of six air pollutants: ozone (O_3), carbon monoxide (CO), total suspended particulates (TSP), nitrogen dioxide (NO_x), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). On the basis of the monitoring data, the Bay Area, including San Francisco, currently is designated a non-attainment area with respect to the federal ozone and CO standards. A three-year summary of the data collected at the BAAQMD monitoring station nearest the project site (about two miles south at 900 23rd St.) is shown in Appendix D, together with the corresponding federal and/or state ambient air quality standards. In 1986, there were two violations of the federal and state eight hour CO Standards and five violations of the previous state TSP standard; in 1985, there were three violations of the federal and state eight hours CO standard; in 1984, there was one violation of the state ozone standard, one violation of the federal and state eight-hour CO standards and five violations of the previous state 24-hour average TSP standard./1/

BAAQMD has conducted two CO "hot-spot" monitoring programs in the Bay Area, including San Francisco. One CO monitoring program was conducted during the winter of 1979-80 at the intersection of Washington and Battery Sts. in San Francisco./2/ The high eight-hour average concentration was 10.1 ppm, which violated the 9-ppm state and federal standards by 1.1 ppm. The high one-hour average concentration of 15 ppm did not violate the 20-ppm state standard or the 35-ppm federal standard. Another CO monitoring program was conducted during the winter of 1980-81 and included the San Francisco intersections of Geary and Taylor Sts., and at 100 Harrison St. at Spear./3/ At Geary and Taylor the observed high eight-hour average concentration was 11.5 ppm, which

ENVIRONMENTAL SETTING AND IMPACTS

D. AIR QUALITY AND CLIMATE

violated the standards by 2.5 ppm, and the high one-hour concentration was 15 ppm, which did not violate standards. At Harrison St. the observed high eight-hour and one-hour average concentrations were 7.8 ppm and 13 ppm, respectively, which did not violate standards. In December 1985, the city monitored CO and counted traffic at the Sixth and Brannan intersection. These data from the "hot spot" monitoring programs indicate that locations in San Francisco near streets with high traffic volumes and congested traffic flows may experience violations of the eight-hour CO standard during adverse meteorological conditions.

Comparison of these data with those from other BAAQMD monitoring stations indicates that San Francisco's air quality is among the least degraded of all the developed portions of the Bay Area. Three of the four prevailing winds, west and west-north west, blowing off the Pacific Ocean reduce the potential for San Francisco to receive pollutants from elsewhere in the region.

San Francisco's air quality problems, primarily CO and TSP, are due largely to pollutant emissions from within the City. CO is a non-reactive pollutant and its major source category is motor vehicles. CO concentrations are generally highest during periods of peak traffic congestion. TSP levels are relatively low near the coast, increase with distance inland, and peak in dry, sheltered valleys. The primary sources of TSP in San Francisco are demolition and construction activities, and motor vehicle travel over paved roads.

San Francisco contributes to regional air quality problems, including ozone, which affects other parts of the Bay Area. Ozone is not emitted directly from sources, but is produced in the atmosphere over time and distance through a complex series of photochemical reactions involving hydrocarbon (HC) and nitrogen oxide (NOx) emissions, which are carried downwind as the photochemical reaction occurs. Ozone standards are violated most often in the Santa Clara, Livermore and Diablo Valleys, because their local topography and meteorological conditions favor the build up of ozone and its precursors.

In 1982, motor vehicles were the source of 86% the CO, 46% of the HC, 44% of the TSP, and 56% of the NOx emitted in San Francisco, while power plant fuel combustion was the largest single source of sulfur oxides (SOx), about 33% of the total./4/ These percentages are expected to apply reasonably well to current conditions.

In response to the Bay Area's ozone and CO non-attainment designations, the Association of Bay Area Governments (ABAG), BAAQMD, and the Metropolitan Transportation Commission (MTC) prepared and adopted the 1982 Bay Area Air Quality Plan, which establishes pollution control strategies to attain the federal ozone and CO standards by 1987 as required by federal law./5/ These strategies were developed on the basis of detailed subregional emission inventories and projections, and mathematical models of pollutant behavior, and consist of stationary and mobile source emission controls and transportation improvements. The BAAQMD, MTC, and California Bureau of Automotive Repair (a state agency) have primary responsibility for implementation of these strategies.

Climate

San Francisco has a relatively moderate climate with temperatures rarely exceeding 90 degrees Fahrenheit or dropping below freezing. The average daily maximum and minimum are 62.4 and 50.9 degrees, respectively, with the warmest and coldest months being September and January, respectively. Fog and low cloud cover are characteristic of San Francisco along with gentle breezes, particularly during the summer months (May through September). Wind frequencies and speeds are lower during the spring, fall and winter months. The mean windspeed during the summer is 8 miles per hour (mph) while in winter it is 4.8 mph and spring and fall is 6 mph. Variables which influence pedestrian thermal comfort levels include temperature, humidity, clothing, level of activity, windspeeds and presence or absence of direct sunlight. Physical effects that cause pedestrian discomfort are wind-blown dust, the blowing of hair and flapping of clothes, and interference with contact

lenses. These physical effects all begin to occur at a windspeed of about 11 mph.

IMPACTS

Air Quality

Buildout under the South of Market Plan would affect air quality in two ways. Emissions would be generated by project-related traffic, and by combustion of natural gas for building space and water heating. Transportation sources would account for over 95% of project-related emissions.

In order to present a conservative analysis, the SOM related emissions projected by this EIR are considered to be new emissions not foreseen by the 1982 Bay Area Air Quality Plan. Some overlap exists between the development-related emissions projected by this EIR and the total Bay Area emissions forecast by the BAAQMD Plan, because growth assumptions were included in their projections. The amount of overlap cannot be determined because the methodology used by this EIR, which is appropriate to a single "project" (even at a general plan level of detail), cannot be directly compared with the methodology used by BAAQMD, which encompasses the entire Bay Area.

Table 9 shows projected daily emissions of air pollutants in 1985 and 2000 from project-generated traffic and building operation and total emissions in 2000 projected for San Francisco and the entire Bay Area by the BAAQMD.

Ozone

Nitrogen oxides (NO_x) and hydrocarbons (HC) are both chemical precursors of ozone. Motor vehicles emit more NO_x than HC, and the emissions from building natural gas combustion would consist primarily of NO_x. As demonstrated by the LIRAQ (Livermore Regional Air Quality model) regional ozone simulations conducted for the 1982 Bay Area Air Quality Plan, an increase in the future NO_x emissions compared to HC emissions would lead to a decrease in ozone

ENVIRONMENTAL SETTING AND IMPACTS

D. AIR QUALITY AND CLIMATE

TABLE 9: EXISTING AND PROJECTED DAILY POLLUTANT EMISSIONS FOR THE SOM PLAN
Emissions (tons per day) /a/

Pollutant	SOM 1985/b/	SOM 2000/b/	S.F. County/c/ 2000	Bay Area/c/ 2000
Hydrocarbons	2.05	1.35	50.4	560
Nitrogen Oxides	2.20	1.84	49.2	492
Carbon Monoxide	18.39	12.33	217.0	2,170
Particulates	0.51	0.32	76.0	764
Sulfur Oxides	0.19	0.23	18.0	225

/a/ SOM and C-3 emissions calculated using BAAQMD, EMFAC6D, vehicular emission factors and EPA AP-42 natural gas combustion emission factors. Emissions of HC, NO_x, and CO include an assumed six minutes of idling time per vehicle trip. Emissions of TSP include dust disturbed from roadway surfaces.

/b/ Based upon 975,000 daily vehicle miles traveled, and emissions due to combustion of natural gas for building emissions.

/c/ Cumulative total emissions of Bay Area development, per Bay Area Air Quality Management District, Air Quality and Urban Development, Guidelines for Assessing Impact of Projects, San Francisco, November 1985.

compared to present levels. This model has also shown that Bay Area ozone concentrations are expected to be within the federal standard in 1987, and thereafter. As future NO_x emissions from cumulative development in San Francisco would exceed future HC emissions, this development would not be expected to lead to an increase in total Bay Area ozone concentrations.

At the same time, total emissions of both NO_x and HC are expected to decrease in San Francisco. Total NO_x emissions were projected in the Downtown Plan EIR to decrease in downtown San Francisco by about two percent from 1984 to 2000, but increase in the Bay Area by about five percent from 1984 to 2000. It is possible that excess NO_x emissions generated by cumulative development (including development potential under the SOM Plan) could increase ozone and/or nitrogenous oxidant concentrations further downwind, outside the Bay Area. In addition, NO_x emissions generated by cumulative development (including the SOM Area Plan) throughout the Bay Area could increase acid rain further downwind, outside the Bay Area, though to a relatively small extent due to the magnitude of the increase and to dilution over time and distance.

Carbon Monoxide (CO)

In 2000, area-wide traffic volumes in the SOM and the downtown area would increase over 1985 volumes. In 2000 the average vehicle is expected to emit

about 44% less carbon monoxide (CO) than in 1984 due to ongoing state and federal emissions controls

The California Legislature mandated a biennial inspection and maintenance (I/M) program which applies to most cars and light trucks in California. This program went into operation in March 1985. Vehicles covered by the legislation must undergo a check consisting of a visual inspection of the vehicle's emission control system, measurement of tailpipe emissions while the vehicle is idling and comparison of the measured emissions rates to the allowable limits for the appropriate year of manufacture and model of vehicle. Vehicles must have the required emission control equipment and must meet the specified standards for hydrocarbons and carbon monoxide. If required emissions control equipment is not present it must be installed. If all required equipment is in place but the vehicle's emissions exceed the standards, the owner must pay a fine intended to result in compliance.

An annual I/M program was evaluated in the 1982 Bay Area Air Quality Plan based on the 1979 source inventory. Based on predicted reduction in hydrocarbons and CO of 25% in vehicles covered, a reduction in total motor vehicle-generated CO of about 18% would be expected. The reduction in total regional CO emissions would be about 16%. The reduction in motor vehicle-generated hydrocarbons would be about 17%; the reduction in total regional hydrocarbon emissions would be about six percent.

As CO concentrations in and around downtown San Francisco are almost entirely due to motor vehicles, future CO levels are predicted to be lower than they would be without an I/M program. Vehicle emission factors used in the model in the Downtown Plan EIR did not take the I/M program into account. By not quantifying predicted reductions from the I/M program, projected CO emissions were over-estimated in the Downtown Plan EIR. Calculation of curbside CO for the SOM Plan in 1985 and 2000 use emission factors that reflect the estimated reduction in emissions due to the I/M program./6/

D. AIR QUALITY AND CLIMATE

Local (curbside) CO concentrations for selected intersections that would be affected by project generated and cumulative traffic are shown in Table 10.

Total Suspended Particulates and SO_x

Emissions of total suspended particulate (TSP) resulting from construction and from vehicle trips generated by the project and cumulative development would increase which could increase the frequency of TSP standard violations in San Francisco, with concomitant health effects and reduced visibility./1/ TSP impacts generated by construction-related activities can be partially mitigated by sprinkling sites with water or other dust palliative during demolition and construction phases and other measures which could be implemented on a case-by-case basis.

Emissions of sulfur oxides (SO_x) generated by the project and cumulative development would not bring San Francisco's sulfur dioxide (SO₂) concentrations measurably closer to violating the standard.

Relationship to Bay Area Air Quality Plan

The 1982 Bay Area Air Quality Plan contains strategies which consist primarily of HC and CO emission controls on stationary sources and motor vehicles, and transportation improvements, and are aimed at attaining the federal ozone and CO standards. As discussed above, emissions associated with the SOM Plan and with cumulative downtown development under the Downtown Plan are not projected by this EIR or the Downtown Plan EIR to increase ozone concentrations, and thus would not conflict with the objectives of the 1982 Bay Area Air Quality Plan regarding ozone. Cumulative development in the greater downtown is projected by the Downtown Plan EIR to potentially result in a violation of the eight-hour CO standard at the Brannan/Sixth intersection analyzed therein. Using the revised emission factors which account for the I/M program in the revised version of MLR contained in the Downtown Plan EIR, the City no longer predicts violations of CO standards at the Sixth and Brannan intersection, or

TABLE 10: EXISTING AND PROJECTED CURBSIDE CARBON MONOXIDE
CONCENTRATIONS AT SELECTED INTERSECTIONS (ppm)/a/

<u>Intersection</u>	<u>Averaging Time</u>	<u>1985</u>	<u>2000/b/</u>
Sixth/Brannan	1-hour	19.1	10.0
	8-hour	<u>13.4</u>	7.0
Fourth/Harrison	1-hour	12.9	9.0
	8-hour	9.0	6.3
Fifth/Bryant	1-hour	12.4	8.9
	8-hour	8.7	6.2
Seventh/Harrison	1-hour	13.6	8.7
	8-hour	9.5	6.1
Mission/Beale	1-hour	12.3	8.6
	8-hour	8.6	6.0
First/Mission	1-hour	11.7	8.3
	8-hour	8.2	5.8
Third/Market	1-hour	12.4	8.9
	8-hour	8.7	6.2
First/Harrison	1-hour	11.6	7.7
	8-hour	8.1	5.4

/a/ The tabulated concentrations are the sum of a background and a local component. The background component is influenced by the cumulative effects of all vehicular traffic in the project vicinity; and the local component reflects the effects of vehicular traffic at the intersection. A description of the method for estimating the local CO component is contained in the letter of Baseline Environmental Consulting to James McCormick, Department of City Planning, January 16, 1987 which is available for review in the project file. The 1985 background component is based on BAAQMD monitoring data.

/b/ The background component for 2000 is based upon the ratio of 2000 to 1985 CO emissions for the City and County of San Francisco (Source: Irene Kan, Baseline Environmental Consulting, personal communication, November 1987.

The eight-hour federal CO standard is 9 ppm; the one-hour state standard is 20 ppm. Concentration in excess of standards are underlined.

ENVIRONMENTAL SETTING AND IMPACTS

D. AIR QUALITY AND CLIMATE

other intersections which have been modeled in the greater downtown. Based on the above, cumulative downtown development would not conflict with objectives of the 1982 Bay Area Air Quality Plan regarding CO./7/

NOTES - Air Quality

/1/ State Particulate standards were changed in 1983 and federal standards were changed in 1987 to concentrate on fine particulate matter (PM-10) which has been demonstrated to have health implications when inhaled. The previous state and federal particulate standards were 100 micrograms per cubic meter (ug/m3) and 260 ug/m3 of particulates, respectively. The present state and federal PM-10 standards are 50 ug/m3 and 150 ug/m3, respectively, of fine particulate matter. Although both the previous and present particulate standards are measured in ug/m3, under the PM-10 standards only those particulates 10 microns or less in size are measured. The BAAQMD has stated that PM-10 comprises about 50-60% of total particulates as previously measured. Thus, the present standards are generally equivalent to the previous standards. BAAQMD is presently monitoring PM-10 at seven Bay Area monitoring stations, including the 16th and Arkansas station in San Francisco. More will be known as to whether there are specific violations to the PM10 standard as more data on PM-10 is gathered and analyzed.

/2/ Association of Bay Area Governments (ABAG), AQMP Tech Memo 33, "Summary of 1979/1980 CO Hot-spot Monitoring Program, "Berkeley, California, June 1980.

/3/ ABAG, AQMP Tech Memo 40, "Results of the 1980/1981 Hot-spot Monitoring Program for Carbon Monoxide," Berkeley, California, January 1982.

/4/ Bay Area Air Quality Management District (BAAQMD), "Base Year 1982 Emissions Inventory, Summary Report," San Francisco, California, November 1, 1982.

/5/ ABAG, BAAQMD and MTC, 1982 Bay Area Air Quality Plan, Berkeley, California, December 1982.

/6/ The emission factors used to estimate curbside CO are from EMFAC7 which reflect estimates of the effect of the I/M program on CO emissions.

/7/Impacts anticipated from cumulative downtown development have been analyzed in the Downtown Plan Environmental Impact Report (EIR), EE81.3, certified October 18, 1985. The air quality setting and impacts discussion in the Downtown Plan EIR (Vol. 1, pp. IV. I. 1-19; Vol. 2, pp. 0.1-9; Vol. 3, Part 1, pp. C&R-I. 1-11) is summarized in the text of this EIR and incorporated by reference herein.

E. ENERGY

SETTING

Energy Resources and Facilities

Electricity

San Francisco's electricity and natural gas are provided by Pacific Gas & Electric Company (PG&E). PG&E's electrical capacity consists of approximately 42% oil or gas-fired plants; 15% hydroelectric; 19% nuclear, 8% geothermal; and 16% cogeneration, pumped storage, and purchases from other utilities./1,2/ The Diablo Canyon Nuclear Power Plant provides about 70% of PG&E's nuclear capacity; Unit One began supplying commercial power in May 1985 and Unit Two began operation in March 1986. In future years PG&E expects to generate electricity from these sources and from coal. The proportion of energy generated from oil and gas is expected to decrease by 1990 with corresponding increases in the proportion of energy generated from other sources listed above./2/ Two major electricity generating facilities are located within San Francisco at Hunters Point and Potrero which supply electricity to substations around the city. The City and County of San Francisco obtains electricity for its own municipal uses through the PG&E system. The City is required to provide power to the Turlock and Modesto irrigation districts from the Hetch Hetchy source. Any remaining power can be sold to other non-resale customers through the PG&E network. Less than one percent of San Francisco's overall energy supply, is provided by the Western Area Power Administration (WAPA) directly to the Treasure Island naval base from power generated through the Central Valley Project./3/

Natural Gas

PG&E distributes natural gas to San Francisco from one gas storage tank located on Pennsylvania Avenue in the City. Natural gas is distributed to

sites within the study area through low pressure underground mains. PG&E purchases most of its natural gas from non-California sources with approximately 78% coming from Canada and Texas, and the remaining 22% from California./1,2/

Energy Requirements for Building Operation

Table 11 page 151 shows estimated SOM energy consumption for building operation in 1985 and 2000. Electricity consumption in the project area is estimated at 326 million kWh for 1985. Natural gas consumption in the project area for 1985 was estimated at 1.2 billion cubic feet (13 million therms). Table 13 page 153 shows estimates of regional and citywide energy consumption patterns in 1985 and 2000 along with the estimates for the SOM.

Citywide demand for electricity in 1984 was 3.8 billion kWh. Peak demand for electricity was about 785MW./1/ Regional demand was estimated at 78 billion kWh.

Citywide demand had historically peaked in winter, whereas system-wide demand usually peaks in summer. However, through the 1970s, summer demand increased more rapidly than winter demand. Recently, citywide demand has been recorded to peak in August or September when temperatures are warmest.

Natural gas use citywide is approximately 35 billion cu.ft. (385 million therms) annually. Regional demand is estimated at 492 billion cubic feet (5,400 million therms)/1/. The relatively small share of consumption attributable to the SOM area is due to the fact that the residential sector accounts for approximately 63% of the City's natural gas use.

Transportation Energy

Electricity, diesel fuel and gasoline is consumed in providing transportation. The energy requirements for this travel depends upon the total passenger miles travelled and the rates of consumption for each mode.

Generally, mass transit is more energy-efficient per passenger mile than automobiles. Thus, a shift of trips from automobiles to public transit would increase average transportation energy efficiency. Further, person trips generated by land uses in the project area would not be expected to, in themselves, alter the number of transit vehicle miles traveled, because transit vehicle miles are dictated by system-wide service. Therefore, additional person trips on transit generated by development under the plan, or mode shifts to transit from automobiles, would not inherently increase energy consumption. The estimates of transit energy consumption for setting and impacts purposes present the project's theoretical consumption based on project person trips, using system-wide factors for passenger miles.

Table 12 page 152 shows energy consumption attributable to project-generated travel in 1985 and 2000. Total vehicle miles traveled in automobiles, vans and other private vehicles attributable to the project area in 1985 is estimated at approximately 243 million miles. Passenger miles travelled on transit would be approximately 64 million miles. Associated gasoline consumption would be approximately 11.7 million gallons. Diesel fuel consumption is estimated at 0.21 million gallons. Electricity consumption attributable to transportation would be 6.9 million kWh. Energy consumption in btu is estimated at 1.72 trillion or 307,000 equivalent barrels of oil (bbl).

Total Energy Consumption

Total annual project energy demand in 1985 from all sources is estimated at approximately 6.38 trillion Btu. This includes estimates for energy demand for building operation by land use, and for project-related transportation impacts.

IMPACTS

Plans and Policies

Energy use in San Francisco is regulated by Title 24 of the California Administrative Code. Title 24 requirements may be met through the component performance standards method which requires the incorporation into a building of a set of specific design features; through the use of non-depletable energy reserves; or by demonstrating that the building would consume no more than a specified quantity of energy (energy budget) expressed as Btus per square foot per year. These requirements are enforced by the City as part of its building permit review process. San Francisco has policies for energy conservation included in the City Administrative Code and in the San Francisco Master Plan, primarily in its Energy Element. Specific energy conservation measures for the city were developed by the Citizen's Energy Policy Action Committee (CEPAC), appointed by the Mayor in 1981 to study energy problems and to recommend energy conservation measures. CEPAC also provided background information for the preparation of the Energy Element. CEPAC's final report was adopted as the local energy conservation action program/4/ An energy management committee, composed of representatives from the public and private sectors, was established to carry out the recommendations of CEPAC for the commercial sector. A district heating committee has been established to provide recommendations on both PG&E and municipal heating systems.

Energy Requirements for Building Operation

Electricity

As shown in table 11, annual electricity demand for buildings in the project area in 2000 would be about 294 million kWh; about 95% of the demand would be generated by commercial uses. Most commercial electricity would be used for lighting, air conditioning and computer operations. Peak commercial demand would be expected to occur on warm weekday afternoons July and August. By contrast, residential electricity demand in San Francisco tends to be lowest

during the summer months, and experienced peak conditions in January. At a citywide level, however, annual peak demand for electricity occurs in the summer months, which coincides with the system-wide peak.

Natural Gas

The demand for natural gas in the SOM Plan in the project area in 2000 is estimated to be approximately 830 million cubic feet per year (9 million therms), of which about 23% would be attributable to residential consumption. Natural gas is used primarily for space and water heating. Demand typically peaks on January mornings as natural-gas fired boilers begin heating buildings.

Table 13 page 152 shows projected natural gas and electricity consumption for SOM buildings in the year 2000 relative to City and regional requirements.

Transportation Energy

Total vehicle miles traveled in automobiles, vans and other private vehicles attributable to the project area in 2000 is estimated at approximately 292 million miles. Passenger miles travelled on transit would be approximately 93 million miles. Associated energy consumption, as shown in Table 12 is estimated at 10.8 million gallons of gasoline, .31 million gallons of diesel fuel and 10.2 million kWh of electricity. Total transportation-related energy consumption would be equivalent to 1.66 trillion Btu, or approximately 296,000 equivalent bbl.

Total Energy Consumption

Total annual project energy demand in 2000 from all sources would be equivalent to approximately 5.58 trillion Btu. This includes estimates for energy demand for building operation by land use, and for project-related transportation impacts.

ENVIRONMENTAL SETTING AND IMPACTS
E. ENERGY

TABLE 11: ESTIMATED PROJECT ENERGY CONSUMPTION-BUILDING OPERATION 1985 & 2000

	1985			2000		
	Electricity	Natural Gas	Total	Electricity	Nat. Gas	Total
	Million KWH	Million	Trillion	Million KWH	Million	Trillion
	<u>Per Year</u>	<u>cu.ft./yr.</u>	<u>Btu/Yr.</u>	<u>Per Year</u>	<u>cu.ft./yr.</u>	<u>Btu/Yr.</u>
<u>Land Use</u>						
Office/a,b,c/	87.12	130.68	1.04	111.30	146.08	1.30
Services/b/	67.84	278.14	1.00	62.91	182.10	0.84
Sales/	116.14	476.17	1.71	96.73	280.01	1.30
Distribution/b/						
Manufacturing/b,c/	45.04	127.35	0.60	13.00	33.57	0.17
Residential/d/	10.00	188.0	0.31	10.00	188.00	0.31
<u>Total:</u>	326.14	1200.34	4.66	293.93	829.76	3.92

/a/ Energy Supply and Consumption Patterns: Trends and Prospects, 1975-1985 (San Francisco Department of City Planning, 1980).

/b/ Downtown Plan EIR (EE81.3 certified October 1984) Volume 2, Appendix N.

/c/ Based on California Energy Commission unpublished projections for the PG&E service area.

/d/ Public Utilities Commission, Bureau of Energy Conservation, memorandum responding to ESA memo of May 18, 1987.

Sources for the factors used in this table and detailed energy calculations for the project are available for public review in the case file at the Office of Environmental Review, 450 McAllister Street, 6th floor, San Francisco, 94102.

TABLE 12: ESTIMATED PROJECT ENERGY CONSUMPTION FOR TRANSPORTATION 1985 & 2000/a/

	<u>1985</u>	<u>2000</u>
Electricity Million KWH	6.9	10.2
Gasoline Million Gallons	11.7	10.8
Diesel Million Gallons	0.2	0.3
Total Btu Trillions	1.72	1.66

/a/ Estimates of existing and projected transportation energy consumption were based on estimates of passenger-trips and vehicle-trips developed for the transportation analysis. Consumption factors for each mode of transportation (automobile, MUNI, BART, Caltrain, regional bus systems) were taken from the Downtown Plan EIR, Appendix N.

Regional Energy Requirements

Development in San Francisco would contribute to increased demand for electricity and natural gas within the PG&E service area. An analysis of potential impacts on PG&E system-wide service is contained in the Downtown Plan EIR, which is incorporated by reference. In summary, San Francisco would account for about four percent of PG&E's system-wide energy consumption in 2000. PG&E expects that about 113 billion kWh of electricity will be consumed in their service area by 2000, a 28% increase from 1984, which would be provided through a wide range of energy facilities.

PG&E expects peak system-wide electrical demand to increase 45% between 1985 and 2000 to about 23,300 MW. To meet new demand, PG&E plans to increase system capacity by about 35% while allowing its reserve margin to decline from about 23% to 15%. PG&E's electrical capacity in 2000 is planned to be about 27,000 MW consisting of about 17% oil or gas-fired plants; about 27% "other"

sources; about 26% hydroelectric; about 12% nuclear; about 9% geothermal; about 5% cogeneration; and about 4% purchases from other utilities./5/

Natural gas consumption in the PG&E service area, at about 600 billion cu. ft. (6.6 billion therms) per year, is not expected to change substantially between 1985 and 2000. PG&E plans to continue receiving most of its natural gas from Canada and from Texas under long-term contracts./6/

TABLE 13: ENERGY REQUIREMENTS FOR THE SOM, SAN FRANCISCO AND
THE PG&E REGIONAL SERVICE AREA, 1984/5,2000

YEAR	SOM/a/		SAN FRANCISCO/b,c/		REGION /b,c,d/	
	Electricity/e/	Natural Gas/f/	Electricity/e/	Natural Gas/f/	Electricity/e/	Natural Gas/f/
1984/5	0.33	1.2	3.8	35	78	600
2000	0.31	1.0	5.0	35	113	600

- /a/ The bases for the estimates of building energy consumption are described above in Table 11.
 /b/ Downtown Plan EIR (EE. 81.3), Page IV. G.12, Table IV. G.3.
 /c/ John C. Brisky, PG&E, letter to Environmental Science Associates (ESA), August 27, 1986, on file at the Department of City Planning
 /d/ Pacific Gas & Electric Company service area.
 /e/ Electricity values are in billion kWh per year.
 /f/ Natural gas values are in billion cu. ft. per year.

SOURCE: Department of City Planning

NOTES - Energy

- /1/ John C. Brisky, PG&E, letter to ESA, August 27, 1986.
- /2/ PG&E, Annual Report, San Francisco, CA 1985.
- /3/ Department of City Planning, 1980, Energy Supply and Consumption Patterns: Trends and Prospects, 1975-1985.
- /4/ Citizens Energy Policy Advisory Committee, 1982, Recommendations for Reducing Community Energy Costs.
- /5/ Pacific Gas & Electric Company, March 1982, "Summary of loads and Resources (Form Number R-1A).
- /6/ California Energy Commission, 1983, Securing California's Energy Future: 1983 Biennial Report.

F. GEOLOGY/SEISMIC

SETTING

An extensive discussion of the geologic and seismic setting of San Francisco was included in the Downtown Plan Environmental Impact Report (EIR), file number EE81.3, which is available for public review at the Department of City Planning. That discussion is incorporated herein by reference and the relevant portions summarized below.

Soils

The majority, approximately two-thirds, of the South of Market Study area is situated on artificial fill. The remaining areas are underlain by Franciscan rock formations or dune sand./1/ There is a strong correlation between soil type and the extent to which an earthquake will impact a given area as is evidenced in the discussion below. Fill materials are generally unstable and located in areas of a high water table adjacent to the shoreline. Therefore development on fill is more susceptible to differential settlement, as well as a variety of earthquake induced hazards such as violent groundshaking, liquefaction, subsidence and tsunamis.

Faults

There are no active faults within the City of San Francisco. The closest active faults to San Francisco include the San Andreas Fault about nine miles southwest of downtown; the Hayward Fault, about 15 miles east of downtown, and the Calaveras Fault, about 30 miles east of downtown. There are also several inactive faults within the city, which are unlikely to result in earthquakes that would affect the study area.

Groundshaking

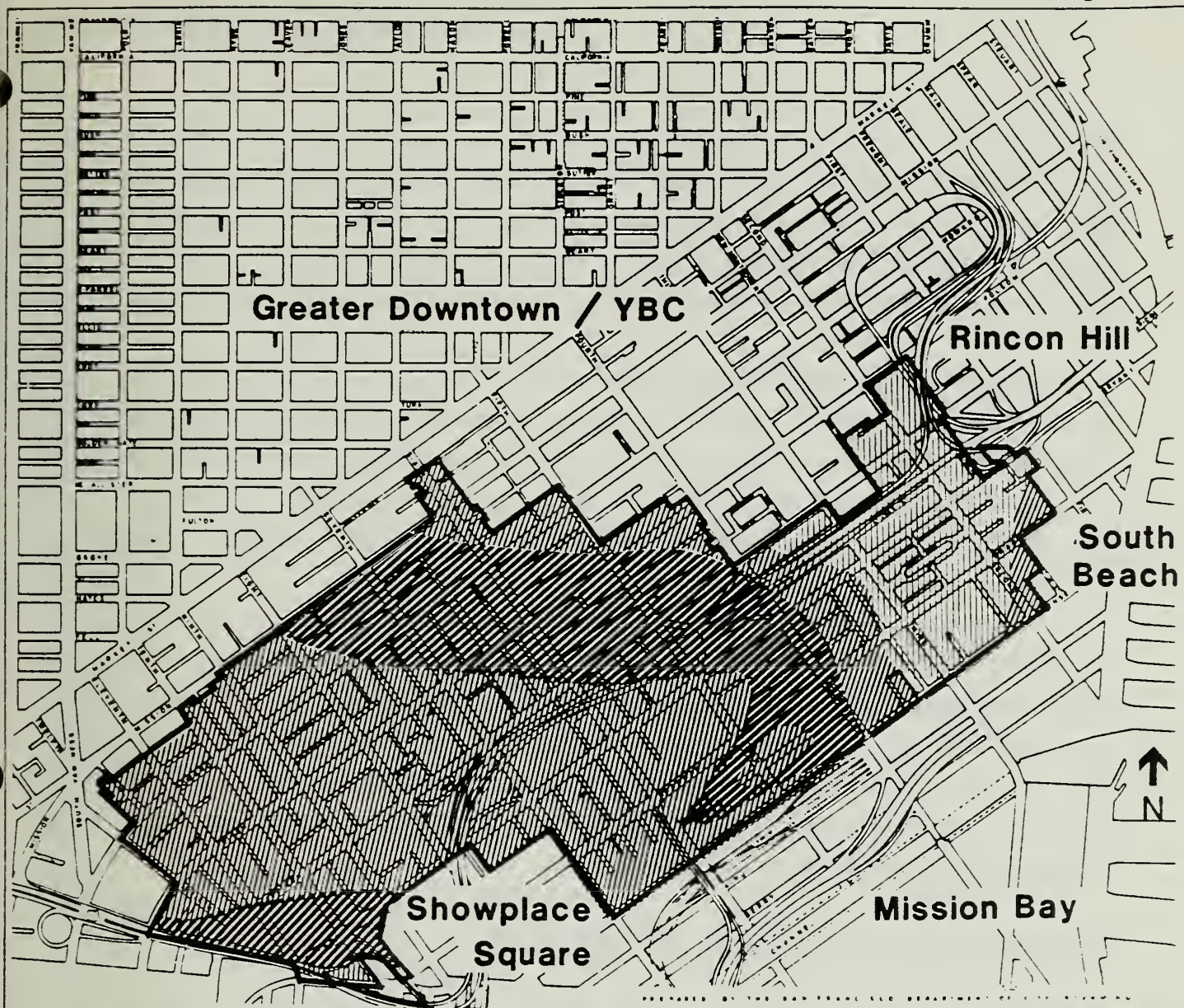
Groundshaking intensities that would result from a major earthquake have been projected for the City of San Francisco by URS/John Blume and Associates./2/ Groundshaking in San Francisco has been classified on a five-point scale ranging from A (very violent) through E (weak), based on the amount of damage that would be caused by groundshaking in an earthquake with a Richter magnitude of 8.3. The South of Market area has no areas in which "A"-rated (very violent) groundshaking would occur.

"B"-rated (violent) groundshaking would occur in two portions of the South of Market Area as shown in Figure 11. Violent groundshaking would occur at the southwest corner of the study area. Violent groundshaking would also occur along an approximately one to two-block wide path beginning between Sixth and Eighth Streets at the northern boundary of the study area and extending southeasterly to Fourth and Fifth Streets in the center and southern portions of the study area. All of this area is underlain by fill.

"Violent" groundshaking would cause general collapse of moderately strong brick and frame buildings, serious cracking of stronger buildings, and lateral displacement of streets, bending of rails, and ground fissure. Properly founded steel-framed buildings constructed to the seismic safety specifications of the San Francisco Building Code would suffer the least damage in the event of violent groundshaking, while unreinforced brick structures built before 1948, the year that the City's first seismic safety buildings requirements were incorporated into the Building Code, would be most susceptible to heavy damage or collapse.

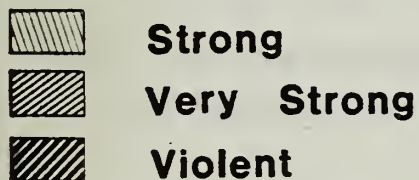
"C"-rated (very strong) groundshaking would occur in most of the area west of Seventh Street and north of Bryant, and south of Bryant from Fifth to Eighth. An additional strip of land immediately west and directly south of the Yerba Buena Center Redevelopment Area (YBC) would also experience very strong groundshaking.

Figure 11



SOUTH OF MARKET PLAN

GROUNDSHAKING INTENSITY



III. ENVIRONMENTAL SETTING AND IMPACTS F. GEOLOGIC/SEISMIC

"Very strong" groundshaking would badly crack masonry structures, resulting in the collapse of some of them. Improperly founded wood-frame buildings would lurch and some of them would collapse. As above, pre-1948 buildings would be the most likely to suffer the greatest damage, although damage to specific structures would depend on their particular engineering characteristics.

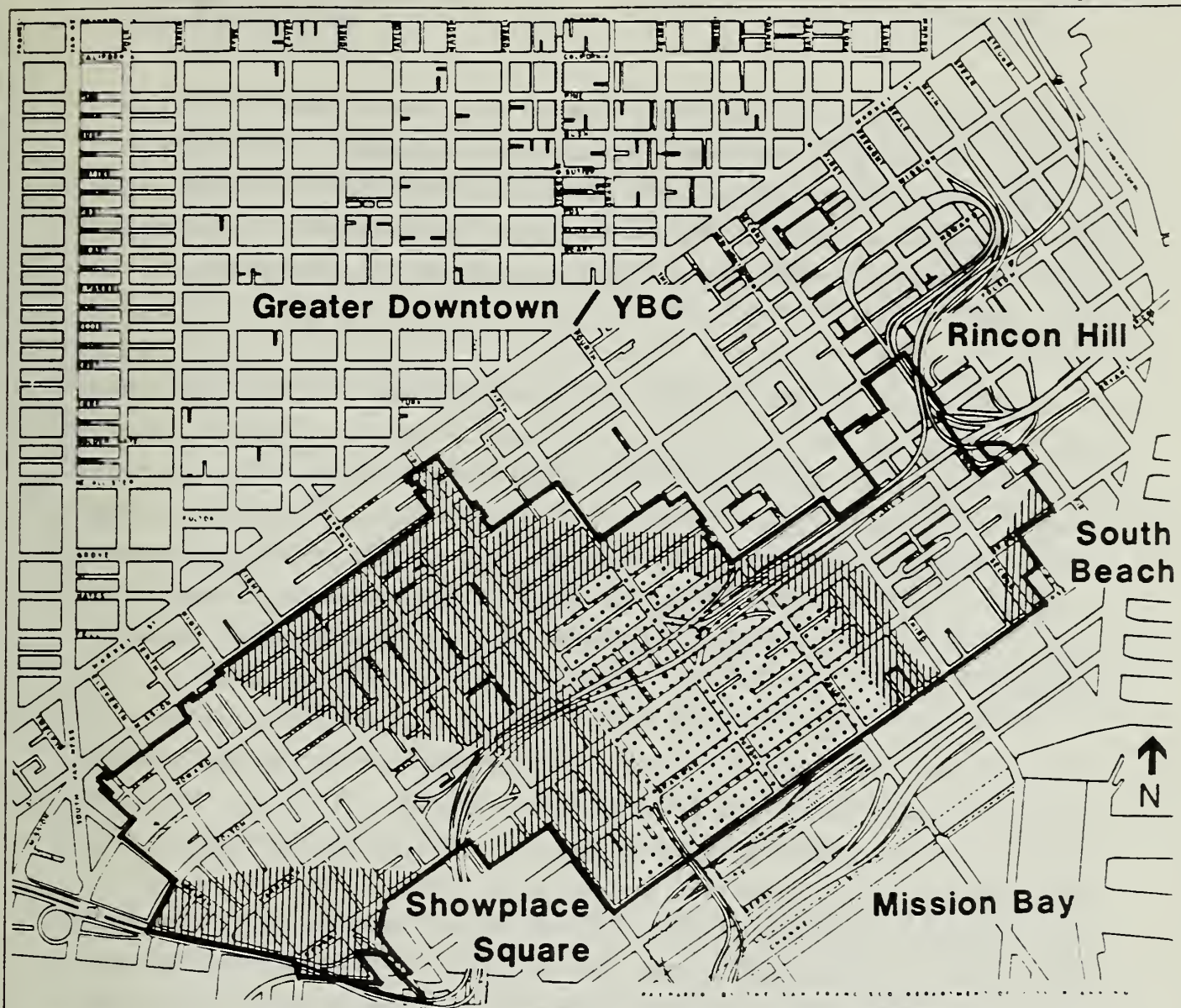
"D"-rated (strong) groundshaking would occur in Rincon Hill and along the Second Street corridor. There is a strong correlation between those areas in the South of Market which are rated "D" and the areas which are underlain by Franciscan Rock Formations or dune sands, such as Rincon Hill. "Strong" groundshaking would cause general, but not universal, fall of brick chimneys and cracks in masonry and brickwork.

An earthquake of the magnitude of the 1906 earthquake would be expected to cause some damage to virtually every building in San Francisco. In addition, groundshaking from large or moderate earthquake (Richter magnitude 5.5-8.5) in the vicinity of the City would topple unattached interior objects and dislodge exterior panels, windows or cornices thereby endangering pedestrians and workers inside existing buildings, or those under construction.

Subsidence/Liquefaction/Tsunami/Seiche/3/

Areas of the SOM susceptible to subsidence completely overlap those susceptible to liquefaction as shown in Figure 12. Once again, this is due in part to the fact that each of these hazards is associated with low-lying areas of landfill, which constitute the majority of the potentially affected areas. Within the rezoning area, the areas subject to "strong" groundshaking, (D-rated), are not subject to these hazards. This includes Rincon Hill and the Second Street corridor. Also, the area north and west of Seventh and Bryant would not be subject to these impacts. As shown in Figure 12, all of the remaining South of Market Area would be subject to subsidence and liquefaction.

Figure 12



SOUTH OF MARKET PLAN



Subsidence / Liquefaction



**Tsunami Inundation and
Subsidence / Liquefaction**

III. ENVIRONMENTAL SETTING AND IMPACTS

F. GEOLOGIC/SEISMIC

If liquefaction or rapid subsidence were to occur in the South of Market, buildings could settle and crack, and water mains, pipes, and underground utilities could break, leaving portions of the affected area without water, power, telephone and other building services. Local streets could buckle or crack from lateral landsliding that might accompany liquefaction or rapid subsidence.

Buildings that would likely receive the greatest damage from liquefaction or subsidence include older structures with poor foundations. Modern high-rise structures generally are founded on pilings driven fifty to one hundred feet or more into the underlying layers, or on thick concrete slabs that "float" on a layer of engineered fill or on layers of soil beneath those most susceptible to failure. Both of these foundation types are engineered to support the structure in the event of ground failure resulting from liquefaction or subsidence.

Subsidence and liquefaction resulting from seismic shaking would also affect infrastructural elements including highways, bridges, utilities, and piers. Projections for a 1906-magnitude earthquake, cited in the Downtown Plan EIR, indicated potential closures of the downtown freeway system, the Southern Pacific/Caltrain commuter station and line as well as closures of the Golden Gate and San Francisco Bay Bridges due to impassable approaches. While Port facilities would be likely to remain open, debris blocked streets and tracks would inhibit movement and delivery of emergency services to, and throughout, the South of Market areas. Communication facilities would be severely impacted in the first one to three days following the earthquakes although public safety circuits would remain available.

Predicted tsunami run-up for the SOM is 4.7 to 5.0 feet above mean sea level (MSL) for the 100 year event, and 7.8 to 8.4 for the 500 year event./4/ Elevations in the SOM rezoning area are generally 10 feet or higher. There is a small portion of the study area, roughly bounded by Harrison Street on the north and Fourth and Sixth Streets on the east and west which are lower than

III. ENVIRONMENTAL SETTING AND IMPACTS

F. GEOLOGIC/SEISMIC

10 feet MSL. Based on the above estimate, this area is hypothetically subject to flooding during the estimated 500 year tsunami. However, it should be noted that the San Andreas and Hayward faults are not considered to be sources for tsunami. The sole source for potential major tsunami in the San Francisco Bay Area is the Aleutian Trench (Alaska)/4/. It should be noted further that mathematical simulation has given the tsunami estimates cited above. Actual seismic events along the Aleutian Trench, including the major 1964 earthquake, have not generated significant tsunami in the San Francisco region.

Seiches are earthquake or landslide-induced movements of confined bodies of water, such as a Bay, similar to the sloshing of water in a bathtub. The 1906 earthquake did not cause a major seiche in San Francisco. However, the potential for seiches would be greater if a major earthquake was to be generated from the Hayward Fault, which would send resonating waves across the Bay. The maximum probable seiche in San Francisco would cause an estimated 10 foot run-up on either side of the bay and would not be likely to exceed the maximum tsunami surveys./2/

Special Geologic Study Areas

Portions of the study are located within Special Geologic Study Areas as defined in the Community Safety Element of the Master Plan. These areas include all areas in which one or more geologic hazards exist. As such, it constitutes a composite of the specific geologic hazards which are illustrated in the maps in this section. A map of the Special Geologic Study Areas is included on page 16 of the Community Safety Element. The Bureau of Building Inspection refers to maps of geologic hazards, among other things, in its review of building permits. (See the Impacts section for further discussion of requirements of the permit review process and Master Plan policies with regard to seismic hazards.)

Codes, Plans, and Policies

Building Codes have become increasingly stringent with regard to seismic design standards over time. The current City of San Francisco Building Code includes a number of design standards to ensure that new buildings are constructed with earthquake-resistant design and materials.

The seismic specifications of the Uniform Building Code and Building Code of the City of San Francisco are intended to insure that buildings that conform to its standards (depending on building type and location) will not collapse in an earthquake of magnitude 7-8 on the Richter Scale.

The San Francisco and Uniform Building Codes are designed to confine earthquake damage to the following levels: 1) in a small earthquake, (approximately Richter magnitude 4.5 or less), no structural or non-structural (cladding, windows etc.) damage would occur; 2) in a moderate earthquake (approximately Richter magnitude 4.5-7.0) extensive non-structural damage would occur, but little or no structural damage would occur; 3) in a major earthquake (Richter magnitude 7.0 to 8.3, the largest expected earthquake on the San Andreas Fault), structural damage would occur, but there would be no loss of life within buildings due to this damage. Also, the current Building Code requires seismic strengthening of buildings when major rehabilitation is done which significantly extends a building's life and reduces potential hazards to building inhabitants during earthquakes.

The Community Safety Element of the Master Plan contains policies which seek to minimize life safety hazards, property damage and economic dislocations due to earthquakes. Objective 1, Policy 2 is to "install an orderly abatement of hazards from existing buildings and structures." Objective 7, Policy 4, is to "require geologic or soil engineering site investigations, and compensating structural design based on findings, for all projects in special geologic study areas." Objective 1, Policy 5 is to "modify permitted land uses and types of structures, where appropriate, according to geologic factors and consistent with levels of acceptable risk".

III. ENVIRONMENTAL SETTING AND IMPACTS F. GEOLOGIC/SEISMIC

The Board of Supervisors has enacted a parapet ordinance designed to reduce the danger of injury to pedestrians from falling parapets. This ordinance requires reinforcing or removing dangerous parapets and cornices from certain designated buildings. Because of their weight, and because they are attached to buildings on only one side, unreinforced parapets would be likely to be the first objects to fall from a building in an earthquake. Parapet removal and renovation is progressing; of approximately 6,000-7,000 buildings likely to be subject to the ordinance, approximately 3,300 have been identified by field surveys and cited for remedial action under the ordinance. Approximately 2,300 have complied with the ordinance. Additional buildings are identified at the rate of approximately 250-300 per year based on block by block surveys by the Department of Public Works. Surveys have begun South of Market Street to Howard Street, and are expected to continue to the south of Howard Street over the next few years. The current enforcement effort covers the Downtown, Chinatown and South of Market areas. Subsequent efforts will include the other remaining areas of the city./5/

Portions of the project area are located within the Fire Zone, as designated in the San Francisco Building Code. The Fire Zone includes all of the rezoning area which is east of Sixth Street and north of Brannan Street, and that portion of the rezoning area which is east of Hawthorne Street and west of Brannan. Within the Fire Zone, Type H, Hazardous building occupancies (as defined in the Building Code), and bulk storage of flammable materials is forbidden.

In reviewing building permits, the Bureau of Building Inspection (BBI) refers to a variety of information sources to determine existing hazards and assess requirements for mitigation. These include maps of Special Geologic Study Areas and known landslide areas in San Francisco as well as the building inspectors' working knowledge of areas of special geologic concern. For example, there are locations of landfill and areas with high water tables, such as the SOM, where dewatering or other precautions are necessary for

III. ENVIRONMENTAL SETTING AND IMPACTS

F. GEOLOGIC/SEISMIC

proper foundation construction. In such instances BBI will require that site-specific soils reports be prepared, by a State-licensed civil or geotechnical engineer, prior to construction. The Building Code also contains provisions which require that grading on slopes of greater than 2:1, or where cut sections will exceed 10 vertical feet, must be done in accordance with the recommendations of a soil engineering report. Through these measures, identified geologic hazards would be mitigated at the project level for new construction in the rezoning area.

The Department of Public Works (DPW), Bureau of Building Inspection (BBI) has completed a citywide inventory of Unreinforced Masonry Buildings (UMB) as of October 31, 1986. Although the study was citywide, buildings of concern were concentrated in the Tenderloin and Chinatown, and to a lesser extent in the SOM. There are approximately 250 UMB buildings in the SOM study area. Of these, 24 are residential buildings providing a total of 1,356 dwelling units (approximately 960 of these are single-room occupancy (SRO)). The City of San Francisco is in the process of developing legislation, similar to existing laws in Los Angeles, which would require all UMB buildings to be brought up to specified minimum standards. This legislation is being developed under the aegis of the Chief Administrative Officer's office, which has been conducting meetings of subcommittees consisting of public and private sector professionals and laypersons who are examining the technical, financial and socioeconomic implications of a retrofit program, in order to determine appropriate standards and language for the legislation. State law requires that San Francisco (and other selected cities) have a seismic ordinance in place by the end of 1989.

IMPACTS

Introduction

The seismic impacts of the proposed project are based on several factors: the number of people present in the area at the time of a seismic event; time of day and day of the week; geologic conditions; building types, foundations and construction methods; building location; earthquake intensity and frequency and duration of shaking. These would vary greatly from one location to another within the rezoning area. The impacts of a major earthquake on San Francisco would also vary depending on whether the earthquake was generated on the Hayward or San Andreas faults. The impact of a major earthquake on the Hayward fault would be focused upon the eastern parts of the City while a major earthquake on the San Andreas fault would have greater citywide effects.

The San Francisco Downtown Plan EIR (EE81.3) discussed potential effects of a major earthquake, (Richter magnitude greater than or equal to 8.0) on both the downtown area and citywide. Relevant portions of that discussion are summarized below and incorporated herein by reference. Estimates of potential earthquake damage in San Francisco generally have been based on the effect of an 8.3 magnitude earthquake as occurred in San Francisco in 1906. It is assumed that this approaches the maximum possible earthquake along the San Andreas Fault.

Most factors which influence the severity of earthquake impacts indicate that the SOM could be heavily impacted by a major earthquake. As discussed further below, the SOM contains a large number of UMB buildings which are subject to substantial damage and/or collapse during a major earthquake.

Additionally, most of the study area is located on landfill and subject to "violent" or "very-strong" groundshaking, and subsidence/liquefaction hazards during a major earthquake. However, the extent to which the SOM's unfavorable

geologic conditions would result in property damage and casualties would depend upon when individual buildings were constructed and the Building Code requirements in effect at that time as well. These issues are discussed further below.

Building/Infrastructure Damage

The Community Safety Element of the San Francisco Master Plan, page 11, contains a map of estimated building damage in San Francisco for a "1906-Type" earthquake, taken from the Blume Report cited above. Building damage is rated on a scale from slight to severe. This map was derived from a generalized approximation of building damage rather than on a building by building survey. However, this map suggests that the South of Market Area contains a large number of buildings which would experience severe damage and would be one of the most heavily impacted areas of the City on this basis. Only Chinatown and the Tenderloin show a higher concentration of such buildings than the South of Market. Each of these areas contains a higher share of UMBs than the city at large. To the extent they are not retrofitted with the level of structural reinforcement deemed necessary in the retrofit ordinance, these structures would be the most likely to collapse from a major earthquake.

In the event of a major earthquake, UMB buildings would suffer major damage or total collapse, thus greatly threatening the lives of occupants inside. In addition, other building stock in the SOM would suffer varying levels of damage, some serious, depending on the construction type and soil conditions. As described in the setting and shown in Figure 11, page 156, the SOM area is subject to various levels of groundshaking, and most of the area underlain by fill is subject to subsidence and liquefaction. In general, wood or metal frame buildings would sustain the least amount of damage. However, damaged foundations, or inadequate attachments between buildings and their foundations would be likely to result in a greater degree of building damage.

Collapsing buildings, shattering windows, falling building cladding,

III. ENVIRONMENTAL SETTING AND IMPACTS

F. GEOLOGIC/SEISMIC

chimney's, parapets and other decorations would pose casualty hazards to pedestrians during a major earthquake. Though the general scale of development in the SOM area is low, 50 feet or less, thereby reducing the magnitude of potential human injury compared to the adjacent downtown, many buildings have exterior building cladding that could fall and parapets that would be likely to topple (assuming they had not been brought into compliance with the parapet ordinance).

The effects of a major earthquake would also include substantial or major damage to streets, sidewalks, sewers, water mains, utility conduits and other infrastructure elements. Damage caused by liquefaction and ground shaking; resulting in cracking and buckling of pavement and bending or disconnection of utility lines would increase the potential for fire, and hinder the ability of emergency response units to reach the area. In and near the SOM Plan area it is possible that freeway on-ramps would rupture or collapse resulting in possible injury or death to motorists and pedestrians in the vicinity of the collapse. Fallen ramps could severely impede or prohibit vehicle travel on surface streets at these locations.

In the event of a 1906-magnitude earthquake, the San Francisco Bay Bridge, Golden Gate Bridge and downtown freeway systems are projected to be closed for over three days due to a combination of ground failure and possible failure of elevated approach structures. The Caltrain commuter service would be interrupted due to ground failure and power outages. MUNI electric service would also be interrupted by power outages and debris-blocked tracks and streets. Port facilities would remain available for emergency operations although transport of people and supplies would be impaired./6/

Communication systems within San Francisco would be at or under 25% of full system effectiveness for over three days after a major earthquake, and total restoration of service would take considerably longer. Public safety circuits should remain generally serviceable./6/ The 911 emergency system is likely to experience interruption and overload after an earthquake./7/ Potrero and

III. ENVIRONMENTAL SETTING AND IMPACTS

F. GEOLOGIC/SEISMIC

Hunters Point power plants would be shut down for an indefinite period. "In the congested portions of San Francisco . . . , the power outage should be considered at 100% for 24 hours, and thereafter at 75% for an additional 24 hours." /8/ All standby generating facilities would be needed.

All of the potential infrastructure damage cited above would impede the emergency response and fire-fighting efforts described below.

Emergency Services and Response/9/

The City, through its Office of Emergency Services (OES) maintains an Emergency Response Plan that identifies all agencies and facilities charged with administering emergency services. The OES coordinates individual emergency response plans in case of a city disaster in accordance with its Emergency Response Plan. This Plan includes, among other things, provisions for establishment of mass care facilities; emergency communication facilities; and establishment of casualty care facilities and casualty collection points. The OES is charged with coordinating emergency efforts with non-City agencies such as the State Office of Emergency Services, Red Cross, the California Highway Patrol and other responsible public and private agencies. The OES also advises private property owners on the development of emergency plans within individual buildings.

The City's Emergency Response Plan divides the City into 10 emergency response districts which correspond to the San Francisco Fire Department's 10 fire battalions. At least one mass care facility is designated in each of these districts. Mass care facilities are designated facilities which provide food, clothing, temporary shelter and other social services for disaster victims. Most often these facilities are school sites, although the designated mass care facility nearest to the rezoning area is Moscone Center. This is one of the two designated facilities for Emergency Response District 3, which includes the rezoning area. The other is the Potrero Hill Middle School at 18th and DeHaro Streets. These facilities would be administered by the Red Cross.

III. ENVIRONMENTAL SETTING AND IMPACTS

F. GEOLOGIC/SEISMIC

The demands on individual mass care facilities would vary with the intensity and source of the earthquake. As discussed above, if the seismic event is centered on the Hayward fault to the east of the City, impacts would be concentrated on the eastern portions of the City, including the SOM Plan area. In that case, the mass care facilities in the western portions of the City would not be overburdened and could be made available to accommodate potential overflow of victims from the eastern portions of the City. If a major earthquake was generated by the northern San Andreas fault, severe damage would occur citywide. Therefore, all mass care facilities would be needed to administer to victims in the immediate emergency response district. It is unknown if the capacity of the designated facilities would be exceeded. (The initial population seeking shelter would include all those who fear that their residences are unsafe, whether or not this is the case. Following the initial emergency, to the extent OES can feasibly determine that certain residences are safe, individuals would be encouraged to return home.)

Supplies for mass care facilities would be provided by private vendors under established contracts with the Red Cross. As supplies are not "pre-positioned", there would be considerable difficulty in obtaining sufficient supplies for each facility in the first 48-72 hours following a major earthquake. For this reason, the OES encourages individual commercial structures and institutions to develop their own emergency response plan and for residents to have sufficient emergency supplies available in the home to maintain themselves without assistance during this period.

Each emergency response district also has at least one designated casualty care facility for treatment of injuries. This may be a hospital with full medical capabilities, or a first-aid station with lesser capabilities for treating less severe injuries. For the SOM area, the designated casualty care facilities are the South of Market Health Center at 551 Minna Street, and the San Francisco City Clinic at 357 Seventh Street. It is likely that a major earthquake would generate injuries which exceed local ability to attend to all

III. ENVIRONMENTAL SETTING AND IMPACTS

F. GEOLOGIC/SEISMIC

victims. For this reason, the City has mutual response agreements with neighboring communities to insure that all medical resources within a reasonable distance would be available for emergency treatment of earthquake victims, although in a major earthquake it is likely that the capacity of regional medical facilities would initially be exceeded.

The nearest hospitals to the SOM Plan area are General Hospital at 22nd and Potrero Streets and St. Francis Hospital at 900 Hyde Street. Depending upon the severity of the earthquake, there would be infrastructure damage as discussed above and debris and other impediments on local streets which would inhibit vehicle access, including ambulances and other emergency vehicles. In the immediate aftermath of a major earthquake the ability to locate and transport victims to medical care may be severely inhibited.

MUNI is charged with providing emergency transportation throughout the City during an earthquake emergency. They would have at their disposal all available public transit vehicles and other rolling stock. Additionally, once the Mayor were to declare a state of emergency, any available transport, including private vehicles such as taxicabs, could be commandeered for emergency use.

The Downtown Plan EIR, Response Document Vol. 3, Part 1, pages K.4-6, contains a detailed description of the procedures to be used on fighting fires induced by a major earthquake, which is incorporated herein by reference. In summary, in the case of an earthquake, the Fire Department would have the assistance of air reconnaissance through the National Guard to monitor fires and street access. City equipment would be available to clear streets (Operation Bulldozer) and the City would have the use of an Auxiliary Waters Supply Systems (AWSS) designed specifically to be available during such emergencies. There is also a system of water cisterns beneath City streets from which water can be taken directly, and emergency water supplies within newer buildings to serve their sprinkler systems. A conflagration is not expected to occur in San Francisco due to improvements in the fire resistance of building

construction, improved water supply, and improved fire fighting techniques./10,11/

Proposition A, passed by San Francisco voters in November 1986, provided for bond funding for, among other things, upgrading and expanding the City's cistern system, the AWSS, and construction of a new Emergency Operations Center. Personnel assigned to emergency service are expected to be on duty within three to twelve hours after an earthquake, although some of these people would be unable to get to their posts due to disruptions in transportation facilities and injuries./12/

In spite of the array of planned services, a major earthquake would result in varying degrees of damage and injury throughout the City. The immediate need to staff and supply all emergency functions; the severe impediments to access and travel throughout the affected area; and the interruptions to communications caused by the seismic event would result in period of time wherein emergency service providers are likely to be overextended, resulting in response delays.

Affected Population

Employment forecasts cited earlier indicate that approximately 6,850 new employees would be added to the rezoning area in the year 2000 for a total employment of approximately 30,000. This represents an approximate increase of 30% over existing conditions. The resident population is not expected to change substantially over the forecast period from the current 8,000. The SOM is projected to have 67.9 employees per acre (epa) in 2000 compared to the current 51 epa. Under existing controls the comparable figure would be 71.8 epa in the year 2000. The Plan would increase the number of people who would be exposed to the geologic hazards of the SOM area discussed above including potential building failure and falling parapets and cladding. Falling objects outside buildings are likely to produce head injuries, fractures or lacerations. Within buildings injuries are likely from falling file cabinets,

III. ENVIRONMENTAL SETTING AND IMPACTS F. GEOLOGIC/SEISMIC

lighting fixtures, shelving etc.. People may be injured by other individuals running from buildings, pedestrian vehicle conflicts or other panic-related behavior, including possible heart attacks.

The potential for injury due to falling parapets is an acknowledged hazard which is currently undergoing mitigation as part of the Parapet Ordinance discussed above. The danger associated with falling cladding or glass is not as certain. Code standards now in effect made the fall of cladding unlikely unless there is poor workmanship and inadequate inspection/13/. There is no record of fatalities caused by falling glass in an earthquake. Designing buildings to meet deflection by wind may be the governing factor in whether or not glass would come out of window frames and fall to the street, rather than earthquake swaying./14/

As stated above, time of day can greatly affect the number of casualties that would occur in San Francisco. This is due to the greater concentration of population in potentially affected areas during work versus non-work hours. The Downtown Plan EIR cited estimates that about 50 out of every 100,000 residents of the City would die if an 8.3 magnitude earthquake were to strike at about 2:30 a.m./8/ The citywide fatality ratio for a similar earthquake at about 2:30 p.m. would be about 130 people per 100,000, and about 190 people per 100,000 at 4:30 p.m./8/ The ratio for congested areas such as the greater downtown area of San Francisco (including the SOM) is estimated at about 500 people per 100,000./8/ The primary causes for the projected higher fatality rate in downtown during working hours are the concentration of people on the streets and sidewalks; the potential for damage or collapse of older structures; falling parapets, and cladding; and the inability of medical teams to reach parts of this area because of debris. During the afternoon, the SOM would have a combined permanent work and resident population of approximately 40,000, plus an unknown number of visitors. The above ratios would imply fatalities within the SOM at 2:30 a.m., 2:30 p.m., and 4:30 p.m. in excess of 20, 50, and 80, respectively. In addition to fatalities there would be hospitalized and non-hospitalized injuries and property damage. Data

III. ENVIRONMENTAL SETTING AND IMPACTS

F. GEOLOGIC/SEISMIC

on injuries in earthquakes is of poorer quality than for fatalities. Federal estimates have assumed that hospitalized injuries would occur at a rate of 4:1 relative to fatalities and that non-hospitalized injuries would occur at a rate of 30:1. For the 2:30 a.m., 2:30 p.m., and 4:30 p.m. time periods, these estimates would imply hospitalized (and non-hospitalized) injuries in excess of 80 (2400), 200 (6000), and 320 (9600), respectively./8/

The generalized injury estimates presented above would vary with the affected population. Elderly or infirm residents would be subject to greater risk than the population at large, as they may be unable to leave an impacted area and unable to go to locations where care may be provided. In addition, the casualty statistics do not account for some unknown number of unreported injuries nor do they account for the psychological trauma experienced by the population during a seismic disaster./15/

The SOM Plan contains conservation elements such as, reduced FAR and limitations on the location of office space, which may increase hazards relative to existing controls by encouraging preservation of older structures. This could result in increased likelihood of death or injury to occupants. Many of these buildings are not in conformance with current Codes and built of UMB construction. As mentioned, these are the structures most likely to collapse in a major earthquake. The Plan would also increase hazards to building occupants to the extent it limits conversions of space to new uses, such as conversion of industrial space to offices, which would otherwise trigger a requirement to upgrade structures to current seismic standards. Conversely, to the extent these same preservation elements reduce the overall intensity of activity in the area relative to existing controls, the project would reduce the numbers of people exposed to potential seismic hazards at any given time, and may encourage adaptive reuse and structural rehabilitation of the existing building stock.

New buildings in the project area would be constructed in accordance with current codes. A number of other buildings would undergo major rehabilitation

III. ENVIRONMENTAL SETTING AND IMPACTS

F. GEOLOGIC/SEISMIC

or change of use over time which would require upgrading of structures to current seismic standards. These buildings therefore would be expected to be safer than existing structures, and seismic hazards due to structural failure would likely be reduced. The Plan proposes reductions in existing height limits. This would ameliorate potential dangers of falling materials from buildings relative to existing controls.

NOTES - Geology/Seismic

- /1/ Franciscan formation rocks are typical of the Northern California Coast Ranges and underlie the hills of San Francisco. Franciscan group rocks include serpentine, graywacke (a sandstone), chert, greenstone, shale, gabbro, kiabase and minor quantities of metamorphic rocks. Dune sand consists of clean, well-sorted, fine to medium grain sand.
- /2/ John A. Blume, San Francisco Seismic Safety Investigation, Geologic Evaluation, 1974.
- /3/ Liquefaction is the transformation of granular material, such as loose, wet sand, into a fluid-like state similar to quicksand. Subsidence is a lowering of the ground surface from settlement of fill or alluvium. This can occur from groundshaking, withdrawal of groundwater, or other causes. Tsunami are transient sequences of long-period sea waves generated impulsively by earthquakes, coastal or submarine landslides or volcanic phenomena.
- /4/ A.W. Garcia, and James R. Houston, Type 16 Flood Insurance Study: Tsunami Predictions for Monterey and San Francisco Bays and Project Sound, report prepared for the Federal Insurance Administration, Department of Housing and Urban Development, November 1975.
- /5/ Jeffrey Ma, Parapet Inspector, telephone communications, March 28, 1988 and April 29, 1988.
- /6/ James F. Davis, John H. Bennett, Glenn A Borchardt, et al., Earthquake Planning Scenario for a Magnitude 8.3 Earthquake on the San Andreas Fault in the San Francisco Bay Area, California Department of Conservation, Division of Mines and Geology, Special Publication 61, 1982.
- /7/ Phillip S. Day, Jr., Director, Mayor's Office of Emergency Services, personal communication, June 15, 1984.
- /8/ S.T. Algermissen, W.A. Rinehart, James Dewey, et.al., a Study of Earthquake Losses in the San Francisco Bay Area, Data and Analysis, National Oceanic and Atmospheric Administration report prepared for the Office of Emergency Preparedness, 1972.

III. ENVIRONMENTAL SETTING AND IMPACTS
F. GEOLOGIC/SEISMIC

- /9/ Phone conversation with Carl Koon, Mayor's Office of Emergency Services, June 23, 1988.
- /10/ Lee Cordner, Industrial Power Engineer, Pacific Gas & Electric Co., telephone communication, July 2, 1984.
- /11/ Federal Emergency Management Agency, An Assessment of the Consequences and Preparation for a Catastrophic California Earthquake: Findings of Action Taken, November 1980, page 23.
- /12/ In case of a major earthquake, personnel necessary to emergency operations residing outside San Francisco would be returned to duty by helicopter and ferry service provided by the military and existing civilian ferry operators. This would include both public sector personnel and designated private sector employees such as certain PG&E and phone company workers. (Telephone conversation with Tom Jenkins, Mayor's Office of Emergency Services, March 10, 1988.)
- /13/ Frank Lew, Superintendent, Bureau of Building Inspection, personal communications, June 6, July 26, and August 27, 1984.
- /14/ Robert Preece, S.E., Preece-Goodee and Assoc., telephone conversation, 9/11/84, and Nicholas Forell, S.E., Forell-Elserren Engineers, written communication, 9/10/84, on file as part of the Downtown Plan EIR, EE81.3.
- /15/ The Association of Bay Area governments has recently developed a methodology for mapping earthquake hazards and estimating casualties based on estimates of building damage. These building damage estimates are derived from inventories of building type and maps of intensity of ground shaking by census tract. A specified level of building damage is estimated based on this information, and estimates of casualties are derived as a ratio of affected population to percent of building stock damaged during the seismic event. Application of this methodology requires detailed surveys on a building by building basis for each census tract. See, Building Stock and Earthquake Losses - The San Francisco Bay Area Example, Association of Bay Area Governments, May 1986. As discussed above, the building of greatest concern for seismic safety in the SOM are UMB buildings. Therefore, the most efficient earthquake safety program would first attempt to minimize the potential hazards of UMB buildings. As discussed, UMB buildings have been inventoried and a mitigation program is in process.

G. COMMUNITY SERVICES

G.COMMUNITY SERVICES

SETTING

Sewer Service

Sewer service to the SOM is provided by the San Francisco Clean Water Department as part of the citywide sewer system. The citywide system has been undergoing expansion and upgrading in order to meet Federal and State regulatory requirements. San Francisco has a combined sewer system in which domestic, commercial and industrial dry weather sewage moves through the same network of sewers that is used to transport rainwater and other street runoff.

While the system's capacity has been sufficient to process dry weather flows, rainfall in excess of 0.02 inches per hour has been enough to overload the San Francisco sewer system, resulting in release of untreated sewage into the San Francisco Bay and the Ocean. This has occurred approximately 80 times per year on the average. Those elements of the system upgrade already completed have reduced the instances of sewage outfalls to approximately eight times or less per year in the Bay and in eight times or less per year in the Ocean. Wet weather flows are substantially greater than dry weather flows. Dry weather flows average approximately 110 million gallons per day while peak rain storms generate up to 14 billion gallons.

Police

Police service is provided to the SOM from Southern Station at the Hall of Justice. Southern Station is staffed by approximately 104 sworn personnel, with 46 of those assigned to the day watch. Response time to calls for police assistance vary with the relative urgency of the incident. On the basis of the information given with the call, each request is assigned an A, B or C priority, with A being most urgent. It is the objective of the Police Department to respond to A calls within 3 minutes and this objective is generally achieved. Response times for B calls are generally within 10-15

G. COMMUNITY SERVICES

minutes, and C calls approximately one hour./1/

Fire

Fire protection and rescue services for the SOM are provided by five stations: Station 1 at 416 Jessie St.; Station 29 at 299 Vermont St.; Station 35 at the foot of Harrison St.; Station 36 at 109 Oak St.; and Station 8 at 36 Bluxome Street, near Fourth and Brannan Streets, the only station within the rezoning area. A combination of three of these five stations would respond to any first alarm incident in any part of the SOM. Response times would range from approximately three to four and one-half minutes to any location within the SOM./2/

G. COMMUNITY SERVICES

IMPACTS

Sewer Service

As the sewer system is being designed to accommodate wet weather events, and wet weather flows are substantially greater than dry weather flows, individual or area-wide development, such as the magnitude of development anticipated under the proposed SOM Plan, would not cause overloads to the system.

The San Francisco Clean Water Department was contacted regarding the proposed project and advised of the estimated increases in building space and employment in the area for 2000. It indicated that the main transport sewers South of Market are inadequate to satisfy the City design criteria./3/ The design criteria are quantitative standards of recommended capacity for these sewer mains. Clean Water Department standards indicate that these mains should be insufficient to accommodate a five year rainstorm, the maximum rainfall event expected in any five year period. This means that while the mains are adequate to serve daily dry weather sewage flows, they are theoretically insufficient to process sewage during extreme wet weather. Therefore, major storms could cause localized overflow of catch basins and street floodings at South of Market locations. However, the Clean Water Department has not received complaints of such incidents occurring in the SOM.

As with system-wide capacity, it is the quantity of rainfall and not the production of wastewater from building operation that is the source of potential overloads of the local sewer transport system in the SOM. Therefore, the development expected under the SOM Plan would not be the source of system overloads, locally or at City treatment plants.

Existing sewer mains in the SOM which do not meet City design criteria will be upgraded over time according to the availability of funding./3/

G. COMMUNITY SERVICES

Police

The Police Department (Southern Station) was contacted regarding the proposed project, advised of the estimated increases in building space and employment in the area for 2000, and questioned about their ability to service this anticipated growth.

The Police Department stated that it would be desirable that personnel and equipment increase by 33% within the forecast period, commensurate with the expected increase in employment in the area, to assure that public service would be maintained at the current level. However, an approximate 10% increase in police staffing and two new vehicles would be the minimum needed to maintain that level./4/ Whether these increases would occur over time, along with the projected increases in employment in the SOM, would depend upon future availability of funding. Should funding be unavailable, there would be a corresponding dilution in police coverage.

Fire

While the limited amount of development potential under the proposed SOM Plan would not be expected to result in the need for additional fire personnel, equipment or facilities, the Fire Department anticipates the need for expanded services to accommodate cumulative development in and adjacent to the South of Market area./5/

Although new construction generally results in reduced fire hazards, the potential increase in cumulative development in Mission Bay, Rincon Hill, Rincon Point/South Beach, the SOM Plan area and Yerba Buena Center together would generate demand for a new facility to replace Station 8. Station 8 is old and in poor condition. At the time of this Draft EIR printing, the Fire Department has been engaged in discussion to build a new, upgraded facility as part of the Mission Bay development plan. Such a new facility would provide adequate service to the area. However, if development in Mission Bay proceeds

III. ENVIRONMENTAL SETTING AND IMPACTS

G. COMMUNITY SERVICES

without the construction of a new station, development potential under the proposed SOM Plan would contribute to cumulative demand that would require some other form of mitigation and in order to assure adequate fire protection services.

NOTES - COMMUNITY SERVICES

- /1/ Lt. Michael Yalon, Platoon Commander, Southern Station, telephone conversation, March 11, 1988.
- /2/ Assistant Chief Gerald Cullen, Assistant Chief, Support Services, Letter to Jim McCormick, Department of City Planning, February 14, 1985.
- /3/ M. Francies, San Francisco Clean Water Program, telephone conversation, October 15, 1987.
- /4/ Lt. Michael Yalon, Platoon Commander, Southern Station, Letter to Jim McCormick, Department of City Planning, September 1, 1988.
- /5/ Assistant Chief Gerald Cullen, Planning Bureau, San Francisco Fire Department, telephone conversation, November 6, 1987.

H. GROWTH INDUCEMENT

The proposed zoning controls implementing the South of Market Plan are conservation oriented; they are designed to protect and promote continuation of the established land use pattern in the area. The controls generally would restrict new office uses to areas where they are already concentrated in the SOM, and prohibit new office uses throughout the rest of the SOM Plan area. By reducing competition for commercial space between office uses expanding from the downtown core and existing service, light-industrial and similar lower rent paying commercial uses, the SOM controls would be expected to moderate the rate of rent increases for non-office space in the area. This would help these uses to remain or expand in the SOM area and promote the location of new commercial uses of this kind in the SOM over time.

Similarly, the proposed controls would be expected to moderate the rate of increase in land values in the SLR and SLI commercial districts, which would prohibit office use. This would reduce speculative development and displacement of existing commercial uses and housing.

For these reasons, the proposed controls would not be expected to generate considerable growth inducing impacts within the Plan area itself. However, they could potentially induce a greater concentration of development, particularly office development, in surrounding areas. To the extent there is continued demand for office space in proximity to the downtown core, the limits on new office uses imposed by the SOM controls would be likely to cause a relative increase in demand for office space and land values in adjacent areas such as Rincon Hill, North Potrero, and the Yerba Buena Center (YBC) and Rincon Point/South Beach redevelopment areas. Should the Mission Bay project be approved, new office space there would be likely to be absorbed more quickly than would otherwise occur.

Over the longer term, beyond 2000, there could be cumulative changes in land

III. ENVIRONMENTAL SETTING AND IMPACT H.GROWTH INDUCEMENT

use patterns in the greater downtown area associated with build-out of the Rincon Hill Plan area and continued development of the redevelopment areas mentioned above (and potentially Mission Bay). This could lead to a change in the land use character of the SOM. As residential population in the greater downtown area increases, demand for associated commercial services such as retail and restaurants would increase. An increase in such amenities in those surrounding areas could lead to new housing development in the SLR and R districts in the future, although this would be expected to occur beyond the year 2000 timeframe of the EIR analysis. Future residential development in the SOM would be likely to occur first in the eastern SOM areas, adjacent to the existing concentrations of new housing in YBC, Rincon Hill, and Rincon Point/South Beach, and expand to other SOM locations over time.

Similarly, continued growth and expansion of the Showplace Square Area could lead to an increase in showroom use within the SOM area adjacent to Showplace Square. Increases in showroom activity could lead to an increase in business activities associated with showrooms such as design studios, and businesses serving showroom employees and customers such as restaurants.

IV. MITIGATIONINTRODUCTION

This section presents a number of measures that would reduce or otherwise alleviate the adverse environmental effects identified in Section III. The mitigations identified below are subdivided into the following categories: measures which are included in the SOM Plan and which would be implemented through its adoption; mitigations inherent in existing Codes or programs; and mitigation measures which are under consideration. Measures under consideration include actions recommended in the Plan but requiring separate implementation efforts, and mitigations which could be implemented by public agencies on a project-specific basis. These measures may be implemented entirely by the City or require action by other agencies either separately or jointly with the City. Where a proposed mitigation would have potential adverse environmental effects, those effects are also addressed below.

It should be noted that the proposed SOM Plan is mitigative in intent. As discussed above, the Plan is the culmination of an effort to develop permanent land use controls for the SOM which would reduce development pressure on existing uses from the adjacent downtown core, reduce intensity of development and preserve the existing character of the SOM. As such, it was cited as a mitigation in the Downtown Plan EIR.

The SOM Plan and Rezoning proposal is inherently different from a specific development project. Unlike a development project, policies and zoning controls are not irreversible once adopted. If environmental problems arise due to application of the policies or zoning controls, or if unforeseen problems or issues begin to emerge in the Plan area or its larger context, policies and zoning controls can be modified relatively easily to help resolve such problems or issues.

IV. MITIGATION

Environmental considerations were taken into account in the process which led to the Plan as proposed by the Department of City Planning. As such, many specific policies of the Plan and concomitant zoning requirements are designed to mitigate many impacts which could otherwise occur. The conditional use process, mandated through the proposed Plan and rezoning for many types of development proposals, could be used to deny proposals which would generate adverse impacts or to impose conditions of approval to mitigate the adverse impacts.

Any development project proposed following, and pursuant to, the permanent controls would be subject to the requirements of CEQA regarding environmental review. Although mitigation measures are incorporated into the Plan's overall framework, conformity with the proposed Plan would not preclude site-specific mitigation measures being required for individual developments when an application for approval is submitted.

The potentially significant impacts of the SOM rezoning are cited in Chapter V (Unavoidable Significant Impacts, page 199). It should be noted the measures cited below are not limited to those which would mitigate significant impacts of the SOM rezoning itself. They are also intended to minimize the SOM area's contribution to existing adverse conditions and/or ameliorate these conditions as far as possible.

Mitigations preceded with an asterisk (*) are taken from the Initial Study, appendix A (page A-1).

LAND USE

Measures Included in the SOM Plan/Rezoning

The SOM Plan proposes policies intended to preserve the existing supply of industrial and commercial support space. These are activities that could be displaced either by demolition of the space they occupy to allow new office

construction or by rehabilitation and conversion of their space to office use. The following amendments to the City Planning Code are proposed under the Plan to achieve those ends:

- o New office space would be prohibited in all SOM districts but the SS0.
- o FAR would be reduced in all remaining commercial areas from the current range of 9.0 to 1 to 5.0 to 1, to a general standard of 2.0 to 1 and a maximum of 4.0 to 1.

The adoption of the SOM Plan and associated zoning controls would limit office use and maximum development potential of individual sites thereby reducing pressure to redevelop or convert industrial and warehouse sites to office uses. This could also serve to keep rents of existing non-office space at lower levels and to retain uses that otherwise might move out of the area. Small businesses and distribution activities would benefit the most from these changes, particularly those which serve C-3 district businesses. Although the controls would reduce the rate at which industrial uses vacate the SOM, some of these businesses will relocate or close due to changing production techniques, cheaper labor supply and other market considerations. The SOM Plan was cited in the Downtown Plan EIR as a mitigation for potential displacement of industrial and commercial support space.

URBAN DESIGN

Measures Included in the SOM Plan/Rezoning

The SOM Plan generally would reduce or maintain existing height limits. The maximum existing building height districts of 160, 130 and 105 feet would be eliminated. With one exception, the Plan proposes height limits of 85 feet or less with the majority of the project area subject to a height limits of 40-50 feet (the exception is a small portion of the northeast corner of the Plan

area which would allow buildings up to 130 feet in height; see Figure 4, page 32). The general reduction in height limits would serve to maintain the existing scale of development and reduce potential for sun shading impacts and wind acceleration caused by new development.

Open Space

Open space would be required for all commercial and industrial uses, at the following ratios: one square foot of open space per 300 gross square feet of general commercial development, which includes retail, personal service, and wholesale trade space (1:300); 1:200 for home and business service space; 1:120 for manufacturing and light industrial space; and 1:90 for office space. Alternatively, the controls allow payment of an in-lieu fee at the following rates to provide off-site open space resources: \$0.67 per foot for retail sales, wholesale, personal service or institutional activities, or home or business service activities; \$1.35 per foot for manufacturing and light industrial; and \$1.80 per foot for office use. These payments would be deposited in the South of Market Open Space Fund and provide a funding source for the creation of new public open space in the SOM, which is identified in the Recreation and Open Space Element of the San Francisco Master Plan as a high need neighborhood. The SOM Open Space Fund would be held by the City Controller's Office and utilized according to directions from the General Manager of the Recreation and Park Department, following input from the Recreation and Park and City Planning Commissions and City Planning Department staff.

Section 143 of the City Planning Code would be amended to require street trees for new developments and major additions or conversions in all SOM districts.

Wind

*Section 263.11 would be added to the Code establishing the 40-X/85-B height transition zone. In this height district buildings would not be permitted to exceed 40 feet without conditional use authorization. Buildings greater than

IV. MITIGATION

40 feet in height would not be approved if such buildings cause adverse wind acceleration in pedestrian walkways, parks and recreation areas. Adverse wind conditions are defined as 11 m.p.h. in pedestrian areas and 7 m.p.h. in public seating areas 10% of the time year round. Exceptions could be granted by the City Planning Commission through the conditional use process where it can be demonstrated that such requirements would unduly constrain the development potential of a site or result in unattractive building design.

Shadows

Shadow reduction requirements of Section 147 of the Planning Code, currently pertaining to the C-3 district, would be extended to some situations in the SOM. Specifically, under the proposed SOM rezoning, new buildings and additions to existing buildings over 50 feet in height in the RHD, HSL, SLI, and SSO districts would be required to be shaped, consistent with good design and without unduly restricting the development potential of the site, to reduce substantial shadow impacts on public plazas and other publicly accessible spaces. In determining the impact of shadows, the following factors would be taken into account: the amount of area shadowed, the duration of the shadow, and the importance of sunlight to the type of open space being shadowed.

Measures Incorporated into Existing Codes and Programs

Buildings which exceed forty feet in height could be subject to Section 295 of the City Planning Code (Proposition K) which prohibits new shadow on public park space from the first hour after sunrise to the last hour before sunset of any season unless it is determined by the City Planning Commission that the shadowing is insignificant. Criteria for the implementation of this Section are being developed by the Department of City Planning. The criteria are subject to the approval of the City Planning Commission and the Recreation and Park Commission.

Measures for Consideration

The SOM Plan calls for better use of existing recreation and open space resources and facilities within the SOM. The Plan recommends the following implementing actions:

- o "Encouraging cooperation between the Recreation and Park Department and the Board of Education in improving open space facilities and programs in the area." This would require joint program planning by staff from the Recreation and Parks Department and San Francisco Unified School District. The Bessie Carmichael School, on Sherman Street, is considered a temporary facility. At such time as a permanent facility is constructed by the School District, the school yard could be redesigned to include improved play areas.

The Plan also calls for creation of new parks and recreational facilities. Specifically, the Plan promotes:

- o "Identification, acquisition and development of a large public open space site in the western SOM designed to incorporate the preferences of residents as stated in the 1984 SOM Residents Survey." The SOM Plan designates certain locations as potential opportunity sites for new open space/recreation facilities. The South of Market Open Space Fund (monies collected from all new development in the Plan area) could be used toward open space site acquisition and improvements, subject to approval by the City Planning and Recreation and Park Commissions. In addition, the western SOM area, a high need area for open space, could be the recipient of funding for open space site acquisition and improvements through Proposition J (passed in 1974), which established a 10¢ surtax on property taxes citywide and yields about \$10 million annually in revenue. Use of Proposition J funds for acquisition in the SOM would require joint approval of the City Planning and Recreation and Park Commissions. Proposition J is due to expire in 1989 and would need to be extended by the voters in order for this source of funds to continue.

- o "Development of Yerba Buena Gardens with open space oriented to SOM residents, particularly seniors." Schematic design of major open space facilities associated with Yerba Buena Gardens is beginning as of this time (early 1988). The facilities would probably not be built until pending expansion of the Moscone Center is completed, around 1991. Input into the basic design plan should be provided as soon as possible to ensure that this measure is carried out.

HOUSING

Measures Included in the SOM Plan/Rezoning

Objectives and policies regarding housing resources in the SOM Plan include: preservation of existing rental housing in the SOM; creation of new affordable housing; increasing the supply of housing consistent with the scale, density and mix of surrounding land uses. The following Planning Code amendments are proposed to achieve these goals:

- o Add Section 232 requiring conditional use for conversion or demolition of any existing housing units.
- o Replace portions of the existing C-3-S, CM, M-1 and M-2 districts, which require conditional use approval for new dwellings, with RED, RM-3, and HSL districts which would allow new housing as a principal permitted use.
- o Permit housing in the HSL and RHD districts at an increased density of one unit per 200 sq. ft., which would increase the attractiveness of developing housing.
- o Artist live/work space would be exempt from FAR requirements in the SOM RHD, HSL, and SSO districts.

Measures for Consideration

The SOM Plan proposes the following implementing actions to preserve existing affordable and promote creation of new affordable and in-fill housing in the SOM:

- o "Make funds and other resources available through the City's housing and community development agencies for tenant counseling and home finding assistance." No funds or specific programs are available to carry out this measure at this time.
- o "Encourage these agencies to make rehabilitation funds available to the public for rental housing and residential hotel units, particularly along Sixth Street, which would remain low-income, in whole or in part, for 20 years."

TRANSPORTATION

Measures Included in the SOM Plan/Rezoning

As explained in the Transportation section, the SOM Plan contains a number of objectives and policies which promote a more effective use of existing transportation systems through increased ridesharing and a decrease in automobiles in the greater downtown. The Plan also promotes increases in transit capacity and ridership. The proposed zoning controls implementing the Plan would modify section 163 of the City Planning Code to require that new buildings, additions or conversions in the SOM creating new office space of 100,000 square feet or more provide on-site transportation brokerage services to promote ridesharing, transit use, flex-time and to reduce parking demand. New office space of more than 20,000 square feet but less than 100,000 square feet would be required to provide similar service to tenants through participation in an SOM network of transportation brokers.

Measures Incorporated into Existing Codes and Programs

Individual project sponsors developing new office space would be required to contribute funds for maintaining and augmenting public transit services in an amount proportionate to the demand created by the project, as provided by the Board of Supervisors Ordinance Number 224-81.

A 1987 change to the State Vehicle Code, the Anti-Gridlock ordinance of 1987, has provided police authority to issue traffic citations to drivers who are found blocking intersections when the signal has changed. Continued enforcement of this law, and resultant education of the driving public, could reduce unnecessary deterioration in local, non-freeway bound traffic, caused by intersection blockages by outbound commuter traffic queuing onto surface streets from SOM freeway ramps.

Measures for Consideration

The SOM plan calls for expanded local transit service in the SOM to link the area to the downtown and regional transit facilities and the rest of the city to minimize vehicle trips made by SOM residents and employees. Proposed implementing actions to achieve those goals include:

- o "Construct a MUNI Metro extension to Mission Bay and possibly Showplace Square.". (While this measure was proposed for consideration within the SOM Plan, and the Downtown Plan, funding has been allocated for design of the extension to the existing Caltrain station at 4th and Townsend Streets. Therefore, the extension is, in fact, assumed to be implemented by 2000 in the transportation analyses, see Appendix C.)
- o "Examine a possible extension of MUNI Metro to the Van Ness/Civic Center area from the proposed Showplace extension. This action recommended in the SOM Plan would require further study to determine if this extension would enhance Metro operation in light of current operating conditions along Market Street and the potential for other potential Metro lines on Van Ness Avenue or the Geary corridor.

IV. MITIGATION

- o Examine possible new local transit lines in the north-south direction between Fifth and Eighth Streets," and "Increase service frequencies of all MUNI lines to the South of Market area, especially in the morning, evening and nighttime commute peak periods of SOM workers." Both of these measures may be considered by MUNI in the course of making periodic citywide service changes. Any funding necessitated for such changes would have to be pursued through the city budget process and MTC, though some funds could become available through Transit Impact Development Fees (TIDF), to which new development in the SOM is subject. At the present time, the SOM is not considered to be underserved in terms of ridership. Therefore, these measures are unlikely to be implemented absent demonstrated need in the future (Peter Straus, MUNI Chief of Planning, telephone conversation, January 13, 1988). MUNI has implemented schedule changes by running buses more frequently during earlier hours, which better serves SOM workers.
- o "Set parking rates to favor short-term parking." Long-term commuter parking should be discouraged. Parking rates should be designed to meet short-term business travel demand. This measure could be implemented on a case-by-case basis.
- o Another measure for consideration is establishment of preferential parking for SOM residents in the residential pockets of the SOM. This measure is being explored by City Planning and DPW staff. Instituting residential preferential parking would allow on-street parking for short-term SOM users but would discourage all-day commuter parking and all-evening restaurant/nightclub parking in the more residential areas of the district.

Additional mitigation measures that have been identified in the environmental review process include:

- o Make Fifth Street one way northbound between Bryant and Howard Streets and Sixth Street one way southbound between Bryant and Howard Streets. These

measures would reduce conflicts between left-turning and through traffic on Sixth Street. This would also complete the traffic pattern which generally prevails in the SOM of one-way streets in the north/southbound directions. This pattern otherwise prevails from Third Street west to Eleventh Street. Implementation would require approval by the Department of Public Works and the Board of Supervisors following public hearings. The necessary signalization could be implemented as part of the operating budget of DPW. Accompanying signage could require supplemental appropriations approval from the Board of Supervisors.

- o Examine possible sidewalk widening on the westside of Fourth Street within the SOM to provide more convenient and efficient pedestrian space for SOM residents. The Department of Public Works (DPW) has been meeting with SOM residents to identify the best locations for sidewalk widening and to consider other sidewalk improvements along Fourth Street, such as providing additional wheelchair ramps. Sidewalks could be widened at specific locations between blocks, such as at bus stops, or for full block lengths. Implementation would require approval by the Department of Public Works following public hearings and the Board of Supervisors.

Regional Transportation Mitigation

Most of the transportation impacts described at the screenlines is a function of travel demand generated by the downtown area and the rest of the region, rather than by development in the SOM Plan area. Consequently, as stated, mitigation of those impacts would require action at the regional rather than project level. This section presents measures needed to mitigate regional transportation impacts, with or without travel from the project area.

East Bay

- o Provide sufficient additional transit service to the East Bay corridor to accommodate the identified excess travel demand in this corridor

throughout the peak period.

- o To help relieve passenger crowding on BART Transbay service, deploy more trains up to BART's peak period service capacity of 2.25 minute headways between 10-car trains, to meet the carriers load factor standard of 1.5 passengers per seat. Such an expansion to maximize peak period service would also result in some additional service capacity beyond the two hour peak period. Thus, some additional modal shifting could occur which would reduce somewhat the 4+ hour congestion period projected to occur on the Bay Bridge in the impact analyses. This measure is technically feasible, and would not require the purchase of additional cars beyond the number assumed to exist by 2000 in the impact analysis. However, additional operational funding would be required for BART.
- o To reduce cumulative vehicular travel demand on the Bay Bridge, MTC should rescind its policy of discouraging AC Transit Transbay service expansion. Additional AC bus service needed to relieve overcrowding on BART by the year 2000 (assuming no further BART service increases beyond those assumed in the impact analysis), and to meet AC Transit's load factor standard of 1.25 passengers per seat would require an increase of about 30% beyond the AC Transit service levels assumed in the impact analysis. Additional funding as well as policy changes would be required before coordinated implementation by MTC, BART and AC Transit could be carried out.
- o To encourage transit and ridesharing, increase bridge tolls for single occupant vehicle trips, particularly during the commute periods. This would require implementation by the Metropolitan Transportation Commission.

North Bay

- o To encourage HOV use to the North Bay, dedicate exclusive bus/HOV lanes during the p.m. peak commute period on one or more of the San Francisco roadway approaches to the Golden Gate Bridge: Doyle Drive, Lombard

Street; east of Van Ness Avenue to the Bridge; and Van Ness Avenue between North Point and Lombard Streets. This could be accomplished in parking lanes (where parking would be prohibited during the peak period), or by dedicating a lane in the non-peak direction for HOV travel in the peak direction. (Such a contraflow lane in the non-peak direction could require additional roadway space to establish a buffer between opposing traffic.) Both options would require funding; implementation would require coordination among Caltrans, the San Francisco Department of Public Works, MUNI, the San Francisco Public Utilities Commission and Golden Gate Transit.

- o Provide intercept parking areas in the North Bay to encourage formation of more carpool trips. Such "park and ride" lots provide a place for drivers to leave their cars and ride together. Funding, site location and implementation would involve local municipalities and coordination between Caltrans and the Golden Gate Bridge and Highway District.
- o As recommended for the East Bay, to further encourage transit and ridesharing, increase Golden Gate bridge tolls for single occupant vehicle trips, particularly during the commute periods. Current toll premiums are applied on weekends and could be applied on all workdays. Implementation would require action by the Golden Gate Bridge and Highway District.

GEOLOGY/SEISMICITY

Measures Incorporated into Existing Codes and Programs

The San Francisco Building Code has mandated increasingly stringent seismic engineering standards. The Code includes standards to ensure that new buildings are constructed with earthquake resistant design and materials. Conversion of use, increase in building occupancy, and building alteration all may trigger seismic upgrade requirements of the Building Code.

A parapet ordinance was enacted by the City to reduce the danger of injury from falling parapets to pedestrians below. The ordinance, adopted as Section 251 of the San Francisco Building Code, requires reinforcement or removal of dangerous parapets and cornices generally from older masonry or concrete

buildings. This current enforcement effort includes the South of Market as well as the Downtown and Chinatown, with subsequent efforts including other City areas, such as Civic Center.

Hazards

*San Francisco's Office of Emergency Services (OES) coordinates individual emergency response plans in case of a City disaster in accordance with its Emergency Response Plan. This plan includes provisions for establishment of mass care facilities; emergency communication facilities; and establishment of casualty care facilities and casualty collection points. The ERP is being revised and is expected to be released in Spring, 1988, with the exception of detailed Appendices B-K (Tom Jenkin, telephone communication 1/13/88). The OES is charged with coordinating emergency efforts with non-city agencies such as the State Office of Emergency Services, the Red Cross, the California Highway Patrol and other responsible public and private agencies. The OES advises private property owners on development of emergency plans for individual buildings.

*The City has adopted an ordinance (Ordinance 253-86, signed by the Mayor on June 27, 1986) which requires that applicants for certain building permits prepare a site history and analyze soil for hazardous wastes within specified areas. The ordinance specifically includes sites which are bayward of the high tide line (as shown on maps available from the Department of Public Works (DPW)). Much of the SOM would fall within this area.

Where hazardous materials are found in excess of state or federal standards, the sponsor would be required to submit a site mitigation plan (SMP) to the appropriate state or federal agency(ies), and to implement an approved SMP prior to issuance of any building permit. Where toxics are found for which no standards are established, the sponsor would request a determination from state and federal agencies as to whether an SMP is needed. Prior to the issuance of any building permit, DPW would have to receive confirmation (through the Director of Public Health) that either no SMP was required, or that an approved SMP had been implemented.

Measures for Consideration:

As discussed in the seismic impacts section, the Bureau of Building Inspection (BBI), at the direction of the Board of Supervisors and its Seismic Investigation and Hazards Survey Advisory Committee (SIHSAC), conducted a citywide inventory of unreinforced masonry buildings (UMB), many of which are in the SOM. In conjunction with this study the Department of City Planning has funded a study of the economics of alternative means and degrees of seismic upgrading.

The City of San Francisco is in the process of developing legislation, similar to existing laws in Los Angeles, which would require all UMB buildings to be brought up to specified minimum standards. This legislation is being developed under the aegis of the Chief Administrative Officer's office, which has been conducting meetings of subcommittees consisting of public and private sector professionals and laypersons who are examining the technical, financial and socioeconomic implications of a retrofit program, in order to determine appropriate standards and language for the legislation. State law requires that San Francisco (and other selected cities) have a seismic ordinance in place by the end of 1989. The information gathered through the BBI survey, SIHSAC efforts, and Department of City Planning Study, will be utilized in the effort to develop the legislation. The retrofit program would require amendments to various City codes and approvals by a number of City departments. Enactment is not likely before 1989. The program would require environmental review, probably in the form of an Environmental Impact Report.

UTILITIES/PUBLIC SERVICES

Concerns have been expressed by many SOM residents, and are noted in the SOM Plan, regarding rodent infestation, and insufficient trash removal throughout the area. The SOM Plan calls for implementation of a comprehensive rodent eradication and trash removal programs; and maintenance and improvement of street cleaning programs. The Departments of Public Works and Environmental

Health have set aside funds to begin to address these problems through placement of debris bins for free disposal, educational materials for area residents, poisoning of sewers, enhanced street cleaning, and localized steam cleaning of sidewalks.

HISTORIC, ARCHITECTURAL AND CULTURAL RESOURCES

Measures Incorporated into Existing Codes and Programs

The SOM rezoning proposes addition of a Section 231 to the Planning Code, which would provide that any use which is a principal or conditional use within the SSO district (except nighttime entertainment uses) may be permitted as a conditional use throughout the SOM if it is determined that allowing the use is essential to the feasibility of retaining and preserving a landmark.

Measures for Consideration

Individual projects which would include excavation below existing foundations could be subject to the following mitigation:

Prior to issuance of a site permit, the project sponsor shall retain an historical archaeologist (or other qualified expert) to perform archival research and site inspection to determine the potential for discovery of cultural or historic artifacts on the project site. Results of this investigation shall be reported to the Environmental Review Officer.

The Environmental Review Officer in consultation with the Secretary to the Landmarks Preservation Advisory Board and the archaeologist shall determine whether the archaeologist should instruct all excavation and foundation crews on the project site of the potential for discovery of cultural or historic artifacts, and the procedures to be followed if such artifacts are uncovered.

IV. MITIGATION

In the event of high probability of discovery of cultural or historic artifacts, the Environmental Review Officer may require that an archaeologist be present during site excavation and record a daily log of observations. The Environmental Review Officer may also require cooperation of the project sponsor in assisting such further investigations on site as may be appropriate prior to or during project excavation, even if this results in a delay in excavation activities.

Should cultural or historic artifacts be found during project excavation, the archaeologist would assess the significance of the find, and immediately report to the Environmental Review Officer and the Secretary of the Landmarks Preservation Advisory Board. The Environmental Review Officer would then recommend specific mitigation measures, if necessary, and recommendations would be sent to the State Office of Historic Preservation. Excavation or construction which might damage the discovered cultural resources would be suspended for a maximum of four weeks to permit inspection, recommendation and retrieval, if appropriate.

This maximum of four weeks shall include any other time periods for which the Environmental Review Officer has required a delay in excavation activities.

The City Planning Commission could require that individual project sponsors contribute to a fund for the purpose of conducting a comprehensive archival research program to establish potential sites of prehistoric resources within the study area. Such a comprehensive survey would serve to establish an initial screening procedure for individual projects regarding the probability of significant finds of prehistoric resources at specific project sites.

V. SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE
AVOIDED IF THE PROPOSED PROJECT IS IMPLEMENTED

The following are suggested significant impacts subject to final determination by the City Planning Commission as part of their certification process. Chapter V of the Final EIR will be revised, if necessary, to reflect the Commission's findings.

This chapter identifies impacts that could not be eliminated or reduced to an insignificant level by mitigation measures included as part of the proposed project, or other mitigation measures that could be implemented, as described in Chapter IV. Mitigation Measures, page 182.

Implementation of the South of Market Plan would allow limited new development in the Plan area. The corresponding increase in employment and commuting to new jobs would increase the use of local and regional transportation systems, which would contribute, albeit a relatively small amount, to cumulative travel demand as presented in the transportation impacts analysis in this EIR, page 95.

Due to the South of Market Plan/rezoning objectives of preserving the area as a light industrial/service district with limited opportunities for new office development, in most cases this area is projected to contribute less than 10 percent of peak period travel on any of the regional freeway or transit carriers crossing the regional screenlines. Mitigation measures are identified to further reduce vehicle trips from the South of Market at the regional screenlines by promoting the use of regional transit systems. However, the beneficial effects of these mitigations on systemwide congestion levels during the p.m. peak period would be negligible due to the SOM's minor share of total regional travel demand.

Conservation of existing housing resources under the proposed Plan is in itself mitigative by maintaining residents in close proximity to the downtown

the City's largest employment center. While not quantifiable with a reasonable degree of reliability, this relationship would reduce demand on regional and local transportation systems by workers who would otherwise have to commute farther distances to work.

The cumulative transportation analysis presented in this EIR indicate that, in spite of a projected increase in the proportion of workers from the South of Market and C-3 survey area taking transit from work to home during the evening commute in year 2000, the growth in non-survey area vehicle travel would result in continued congested levels on the freeways. The projections present the East Bay Bay Bridge corridor as the most severely affected, with congestion extending beyond the two hour p.m. peak period defined in the EIR analysis.

To the extent that SOM area development would contribute to the cumulative impacts analyzed, the mitigating measures presented in this document would help to reduce that contribution. However, because the cumulative impacts analyzed are also generated by regional travel unrelated to activities in San Francisco, other measures would be necessary to eliminate the projected significant transportation impacts.

Additional travel to and from San Francisco generated by development under the South of Market Plan would contribute to cumulative pollutant emission increases which would cause violations of air quality standards for Total Suspended Particulates in San Francisco, with concomitant health effects and reduced visibility.

The project would have a significant seismic safety impact, as it would tend to preserve buildings which are seismically unsafe and would accommodate higher population densities in buildings subject to damage during a major earthquake, particularly in areas of unstable soils. Available mitigation measures would improve the structural ability of buildings to withstand major seismic events, and continued development and renovation would replace non-seismically-reinforced buildings with buildings built to current code

standards, thereby reducing risk. However, greater concentrations of people would be susceptible to falling objects from buildings and would create congestion which, along with street debris, would impede emergency access of vehicles responding to fire and other earthquake-related emergencies.

VI. ALTERNATIVESA. ALTERNATIVE 1: NO PROJECT- EXISTING ZONING CONTROLS:

The No Project alternative is represented by a development scenario which would be expected under present permanent zoning controls (see Figure 7, page 51). The residential districts scattered throughout the project area would remain very small; the C-3-S district along the north side of the project area south to Folsom Street would remain, allowing housing only as a conditional use. The rest of the area would remain within M-1 and M-2 districts, also allowing housing as a conditional use. Office would be permitted in all non-residential districts of the SOM. Maximum FAR would be 5.0 to 1 in the C-3-S district and both M districts. Height limits would range from 30-160 feet. The area from Folsom Street to the north would be within 130 and 160 foot districts. The area east of Second Street, and along Townsend Street between Second and Fourth Streets would be within a 105 foot district. The rest of the SOM would generally be within height districts ranging from 30 to 50 feet.

The potential impacts of this alternative were specifically discussed and contrasted with the impacts of the proposed SOM Plan and rezoning in the Zoning, Land Use and Employment section of this EIR. Continuation of existing zoning controls would result in a greater employment increase in the SOM area than under the SOM Plan; approximately six percent more employment is forecast under this alternative than under the Plan. (Under the Plan, rezoning area employment would grow by 30% versus 38% under existing zoning controls.) Consequently, those environmental impacts which are principally a function of the level of employment and business activity in the SOM, such as transportation, air quality or energy impacts, would be correspondingly greater under this alternative than under the Plan. There would be greater office and retail employment growth under existing controls than under the Plan. In other business activities, there would be more employment decline

than there would be under the Plan. In certain other activities, employment would grow under existing zoning, but at a slower rate than it would under the Plan.

The difference in the amount of newly constructed building space forecast under this alternative or under the Plan within the forecast period would not be a substantial (approximately one percent).

The employment forecasts under the No Project Alternative indicate that existing non-office uses would be displaced by office uses expanding from the downtown to a greater extent than would occur under the SOM rezoning. For example, service uses would decline in the area as office and other relatively higher-rent-paying uses continue to expand South of Market. Service uses would decline by approximately 14% under existing zoning, where a 2% increase is forecast under the SOM Plan. Manufacturing and distribution uses would decline more rapidly than under the SOM Plan, since there would be more opportunity for new development or conversion to accommodate higher-rent-paying uses. An approximate 27% decline is forecast under the Existing Zoning scenario compared to a 6% decline under the SOM Plan. This would encourage the on-going sale and exodus of manufacturing concerns in the SOM area.

Under existing zoning, nighttime entertainment uses could continue to expand throughout the SOM, including within areas adjacent to existing residential uses. This could exacerbate the existing conflicts between these land uses as nighttime entertainment uses are often the source of evening noise, parking congestion and increases in litter.

Architecturally significant buildings would be more likely to be altered or demolished due to increased development pressure from office uses and the greater development potential permitted for individual commercial sites throughout the SOM. Because FAR and height limits would continue to be generally greater than the existing scale of development, over time, this alternative would allow for continuing change in building form in the SOM

through an increase in building heights and mass relative to the limits of the SOM Plan. (Potential demolitions of architecturally significant buildings would be less likely under all scenarios in the Second and Townsend Street corridors should the proposed historic district be adopted.)

Under the No Project alternative, there would be no requirement for new commercial development to provide open space. This would increase the shortage of open space in the area relative to the SOM Plan by allowing increased daytime population with no corresponding increase in open space.

As discussed in the Transportation Section, based on estimated total travel demand SOM-based transportation impacts associated with the No Project Alternative, and its contribution to cumulative transportation, would be approximately four to six percent higher under the existing zoning scenario than under the Plan. Although the transportation impacts of the No Project alternative were not taken through the travel assignment process to determine impacts on specific screenlines, for the reasons given in the Transportation Section, it can be assumed that impacts of the No Project Alternative would be approximately five percent greater than the SOM Plan in all cases. This would include automobile travel demand which is the primary source of air quality impacts and a major source of energy consumption. Therefore, air quality and energy impacts would be proportionately greater under this alternative.

Under the No Project Alternative, more employees and visitors to the SOM would be exposed to existing seismic hazards than under the SOM Plan. The higher level of office employment (19%) forecast under this alternative indicates that relatively more non-office space would be converted to office uses. These conversions generally would require that the converted space be brought up to the seismic standards of the building codes in effect at the time of conversion. As a result, over time, a greater proportion of building space in the SOM would be brought up to the more stringent building Codes of current and future years, thereby reducing earthquake hazards for occupants of these structures.

This alternative has been rejected by the City because it would not achieve the fundamental objectives of the SOM Plan including but not limited to: the protection of existing business service and industrial uses from displacement due to the expansion of office uses from the Downtown core; preservation of neighborhood scale and character; provision of additional open space in the SOM; encouragement of in-fill housing in the SOM; provision of affordable housing in major new developments; protection of SOM residential areas from proliferation of nighttime entertainment uses; minimize parking congestion; protect low-cost housing from conversion and demolition; control concentration of homeless programs and halfway houses by requiring conditional use approval; protect architecturally significant and historic buildings from demolition; and protect the SOM artist community from displacement.

B. ALTERNATIVE 2-NO SECONDARY OFFICE DISTRICT:

This alternative would modify the SOM Plan by eliminating the Service/Secondary Office (SSO) district, generally located along Second and Townsend Streets, and replacing it with an extension of the SLI district (see Figure 13). The major result of this change is that new office uses would not be permitted in the SOM Plan area. Additionally, new nighttime entertainment uses, permitted in the SSO, would not be allowed. The commercial FAR for the area designated SSO under the SOM Plan would be reduced to 2.5 to 1, from the proposed limits of 3.0 to 1 and 4.0 to 1. Height and bulk limits and all other general Planning Code provisions proposed in the SOM Plan would apply under this alternative.

This alternative would reduce development potential and future employment growth in the SOM relative to the SOM Plan through the prohibition of office use and reduction of allowable commercial floor area. This would reduce competition for existing non-office space from office uses and thereby moderating the rate of rent increases for this space. Within the forecast period Alternative 2 would provide for relatively more growth (or less

SOUTH OF MARKET

ALTERNATIVE 2: NO SECONDARY OFFICE DISTRICT PROPOSED USE DISTRICTS

- SLR Service/Light Industrial/Residential
- RED Residential Enclave District
- RSD Residential Service District
- SLI Service/Light Industrial
- SPD South Park District
- P Public

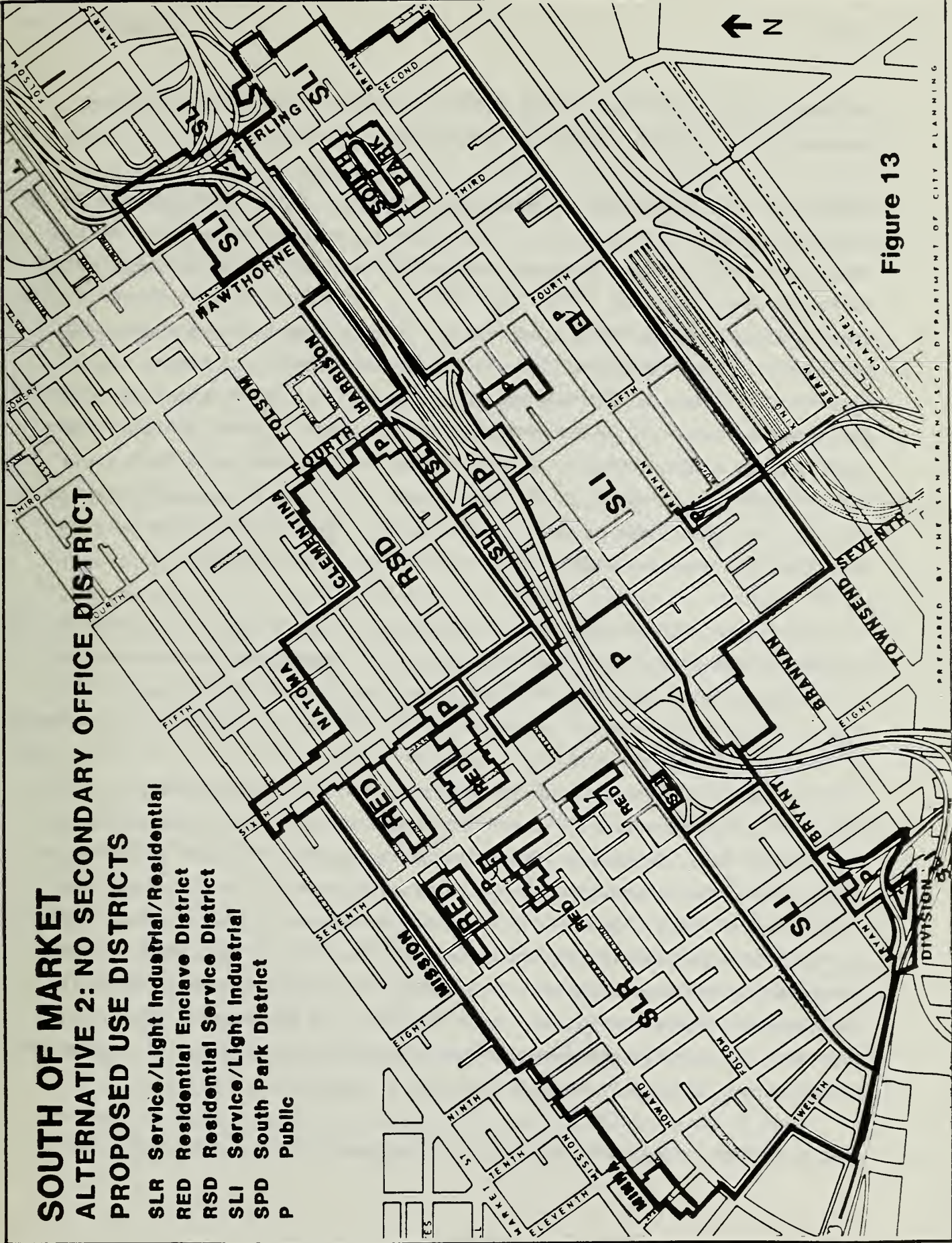


Figure 13

decline) in permitted non-office activities such as service, artisan and manufacturing uses than under the SOM Plan.

However, the impacts of this alternative would not differ greatly from the SOM Plan within the forecast period. As explained, in the Zoning, Land Use and Employment Section, page 49, most growth in the SOM through 2000 is forecast to result from increased office employment. There currently is excess office space available in recently converted buildings, vacant office space, and additional space forthcoming in office projects approved or under construction. Most of the 85% employment growth in office activities forecast for the SOM Plan could be accommodated in this space without additional new construction or conversions. Therefore, as was true for the SOM Plan/rezoning, the impacts of Alternative 2, with less employment growth than the SOM Plan, would not be fully realized until most of this space has been completed and occupied which would occur after the year 2000.

Over the longer term, Alternative 2 would increasingly impact land uses in and outside of the Plan area. There would be more competition for existing SOM office space than under the SOM Plan, resulting in relatively higher office rents. Reduced development potential in the SOM would contribute to increased office rents in surrounding areas including the C-3 districts, the rest of the South of Market (outside the Plan/rezoning area), and Mission Bay, as office users who would otherwise locate in the SSO district seek office space at these locations. Therefore, this alternative would contribute to increased demand and faster absorption of office space in the Mission Bay area than under the SOM Plan, should the Mission Bay development proceed. Lower rent paying office uses would seek space outside the SOM and contribute to more pressure for office development in surrounding locations such as Northern Potrero Hill, Showplace Square, South Van Ness and the North Mission. Overtime, it could become more difficult to enforce prohibition of expansions of office use throughout the SOM, as demand would be strong.

Over the longer term, this alternative also could result in less office use

overall in the City than would otherwise occur. While potentially preserving opportunities for lower rent paying service and distribution functions within the SOM, the overall reduction in office use citywide could cause a reduction in the demand for the services of some of these businesses which rely on a client base of office users, principally in or near the downtown, relative to the demand that would be expected under the SOM Plan or existing zoning.

As explained in the Zoning, Land Use and Employment Section, page 49, many larger space users such as manufacturing and some distribution functions have been leaving the SOM due to space needs or other locational decisions unrelated to zoning. Changing production technologies and transportation needs have created lower-cost options for many of these uses outside the greater downtown. Therefore, these uses are forecast to continue to relocate outside the SOM regardless of land use controls. These vacated larger facilities may remain underutilized for some time as it would be difficult for allowable activities to fully occupy this space. However, the availability of relatively low-cost large floor spaces within the SOM could encourage the expansion of showroom uses to the east of Showplace Square within the western portion of the rezoning area. This might also provide opportunities for large-scale retail outlets within the SOM.

The reduced potential for new construction could result in preservation of architecturally rated buildings in the SOM which might otherwise be altered or demolished for new construction, particularly within the area removed from the SSO district under this alternative. However, most architecturally rated buildings in the SOM are large warehouse structures. There is not a strong incentive to demolish these structures under either the proposed Plan or this alternative given that the FAR in those buildings is generally greater than the limits proposed in this alternative. The probability of demolitions would be marginally greater under the SOM Plan than Alternative 2 as the Plan includes higher FAR standards in its SSO district. However, conversions may be more economic than new construction under either scenario in many instances. Converted buildings are allowed credit for existing parking

deficiencies under the current Planning Code and waivers for parking requirements for significant buildings are proposed under the Plan. As a result, converting existing space may be more lucrative than constructing new space and meeting the full Code requirement for off-street parking.

Building scale in the SOM would not be likely to differ substantially between the SOM Plan or Alternative 2. Controls on building form and land use are identical under both scenarios in all but the SSO district. To the extent new construction occurred under this alternative, it would be comparable to or slightly smaller in scale than under the Plan. Further, the overall lessening of development pressure resulting from the prohibition of office space could reduce the incentive to maximize building envelopes on any given site under this alternative.

The reduction in development potential and slower rate of employment growth under Alternative 2, relative to the SOM Plan, would result in a corresponding reduction in travel demand and impacts upon transit, traffic and pedestrians. The contribution of SOM-generated transportation impacts to cumulative travel of the greater downtown and the region would be lessened. This would not substantially change future travel conditions, however, since SOM-based travel is a small percentage of cumulative travel at the screenlines under any of the alternatives considered. As discussed, some of the reduction in SOM employment would be expected to shift to nearby areas and would still be reflected in travel at the screenlines and/or within the City. In any event, total travel would be expected to be less under this Alternative than under the SOM Plan or existing permanent controls. SOM employment is equivalent to approximately one-tenth of C-3 district employment and is less than five percent of citywide employment. SOM travel at the screenlines under the Plan, with greater employment than Alternative 2, would be approximately represent approximately three to nine percent of the cumulative total in any regional travel corridor. SOM-based travel on MUNI would be five percent or less of the total during the periods analyzed in all but the southeast corridor. SOM-based travel on the MUNI southeast corridor would be 13 and 14 percent of

the cumulative total in the peak period and peak hour, respectively. This percentage would be less under Alternative 2.

Air quality impacts of this alternative would be reduced relative to the SOM Plan commensurate with the reduction in employment and associated vehicle travel, and decreased building operation emissions. Demolition, excavation, and construction of new buildings in the SOM area, and vehicle trips generated by this alternative and cumulative development, would generate total suspended particulate (TSP) emissions. As is applicable to the SOM Plan, this alternative could contribute to an increase in the frequency of violations of the TSP standard in San Francisco, with concomitant health effects, although these would occur less frequently under Alternative 2 than under the SOM Plan. No violations of CO standards were forecast to occur under the SOM Plan and therefore, none would occur under Alternative 2.

The differences in air quality emissions between the SOM Plan and this alternative (or any of the alternatives analyzed in this EIR) would not result in a measurable difference in regional air quality, nor change the region's performance with regard to meeting State and Federal air quality standards due to the small share of regional emissions attributable to the SOM.

Due to the further reduction in development potential under this alternative compared to the SOM Plan, there would be less new building space, employment growth and therefore lower levels of associated travel demand. Consequently, there would be a further incremental reduction in energy consumption under this alternative. However, energy use could be less efficient to the extent that the reduction in development potential results in older, less energy efficient buildings remaining in their current use, rather than rehabilitated as part of conversion to other uses or demolished and replaced with new construction.

The reduced demand for new or upgraded building space relative to the SOM Plan may encourage the retention of older and more hazardous structures which would

be vulnerable to major damage or collapse in the event of a major earthquake. Building occupants and visitors would be exposed to higher potential for serious injury or death in such structures, compared to new or structurally rehabilitated buildings that meet more recent, stricter, Building Code requirements.

Conversely, to the extent this alternative would reduce the overall intensity of activity in the area relative to the SOM Plan, it would reduce the numbers of people exposed to potential seismic hazards at any given time. Moreover, further restriction in development opportunity under this alternative could encourage adaptive reuse and structural rehabilitation of the existing building stock, reducing earthquake damage potential. The degree to which this might occur cannot be estimated.

The Department of City Planning has rejected this alternative for several reasons. By eliminating the SSO district proposed in the SOM Plan, this alternative would eliminate the potential for office growth in an area already predominantly office use (Second/Townsend). Small professional offices in other SOM locations, where office is now permitted, and which are growing, would no longer have the SSO district as a location option for expansion. This alternative would place existing office space in non-conforming use status, creating an administrative burden for the City in tracking non-conforming uses, and be troublesome for property owners in that non-conforming status limits potential expansion of existing businesses placed in non-conforming status. At the same time, current controls and proposed development plans promote office uses on the northern and southern boundary of the SSO districts. Therefore, current land use patterns and existing and proposed land use policies in surrounding areas support permitting office use in the area designated SSO under the Plan. While it is logical to provide physical connection between the two office districts (C-3 and Mission Bay) and much of this area is in office use, there is also considerable SLI type uses within the area which could be threatened by allowing continued office growth. Therefore, the City is limiting office activity to a small area of the Second and Townsend Street corridors which is already predominantly (80% or more) in non-SLI (office or retail) use.

Permitting office use would be likely to increase conversions of significant buildings to office use, thereby triggering seismic upgrading requirements of the Building Code and ensuring preservation of these structures.

The SSO district would accommodate demand for small professional office space otherwise not permitted throughout the SOM.

C. ALTERNATIVE 3 - MORE HOUSING:

This alternative would consist of extending the SLI district to encompass all of the area south of Harrison Street, except for South Park which would remain RC-2, and rezoning all of the area north of Harrison as an RC-4 (Residential-Commercial Combined, High Density) district (see Figure 14). As with Alternative 2, new office uses would not be permitted in the SOM. The commercial FAR for the area removed from the SSO designation under the SOM Plan would be reduced to 2.5 to 1, from the limits of 3.0 to 1 and 4.0 to 1 proposed under the SOM Plan. New nighttime entertainment uses, permitted in the SSO under the Plan, would not be allowed.

All of the RC-4 district in this alternative would have an 80 foot height limit and a 1.0 to 1 commercial FAR limit (see Figure 15). RC-4 districts permit housing at a density of one unit per 200 square feet of lot area. FAR limits would not apply to dwellings. Within RC-4 districts, commercial uses permitted in C-2 districts (with the exception of office and nighttime entertainment uses) are permitted as of right on the ground floor and by conditional use on upper floors. However, the proposed 1.0 to 1 commercial FAR limit in this alternative would be likely to limit most commercial use to the ground floor regardless of the conditional use requirement. (The FAR in RC-4 districts is generally 4.8 to 1).

Impacts upon residential uses under this alternative would not differ substantially from the SOM Plan within the forecast period. Little or no residential growth was estimated to occur under the SOM Plan for the reasons

SOUTH OF MARKET **ALTERNATIVE 3: MORE HOUSING** **PROPOSED USE DISTRICTS**

- RC-4 Residential-Commercial (Combined, High Density) District
- SLI Service/Light Industrial
- SPD South Park District
- P Public

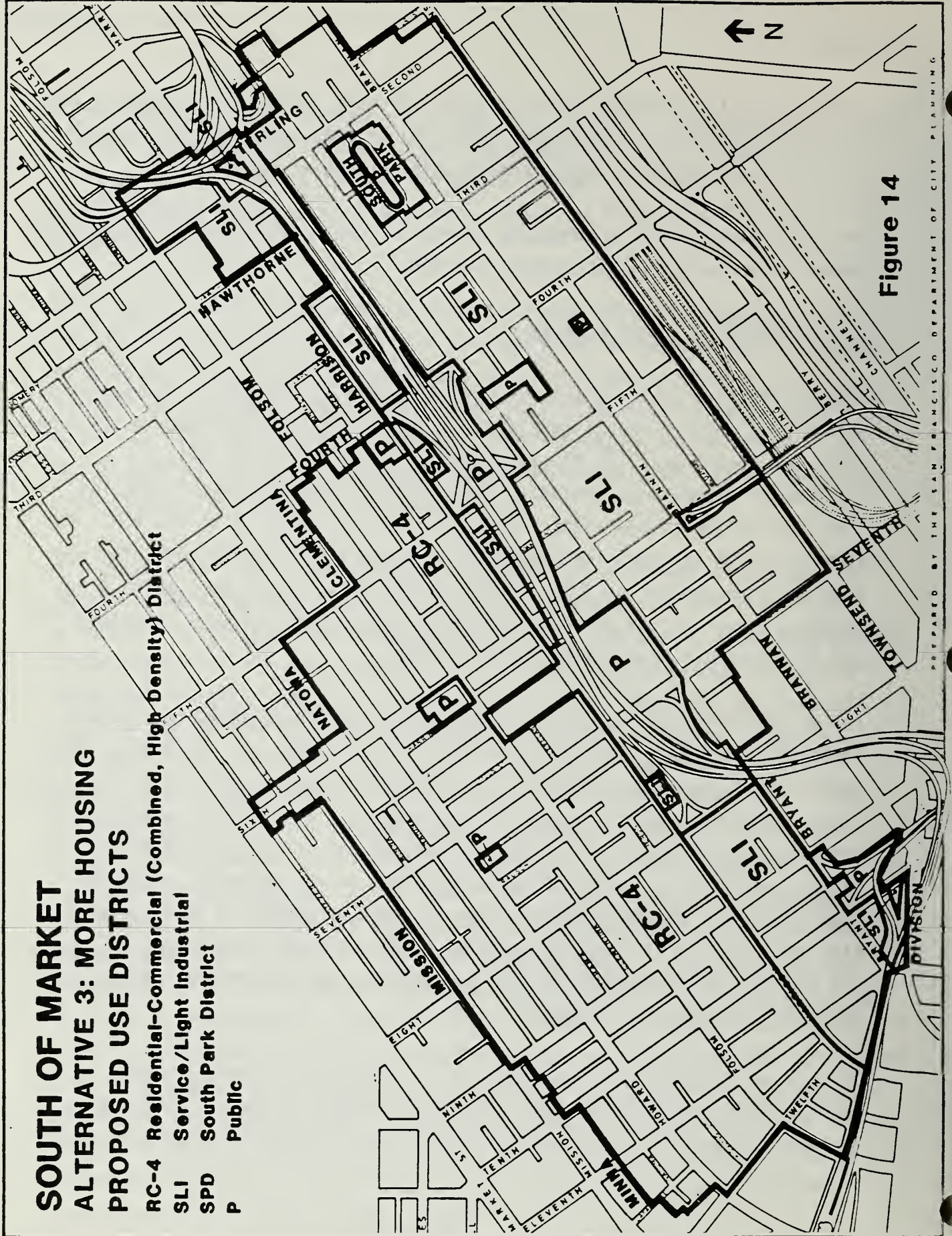


Figure 14

SOUTH OF MARKET PLAN

ALTERNATIVE 3:

PROPOSED HEIGHT AND BULK DISTRICTS

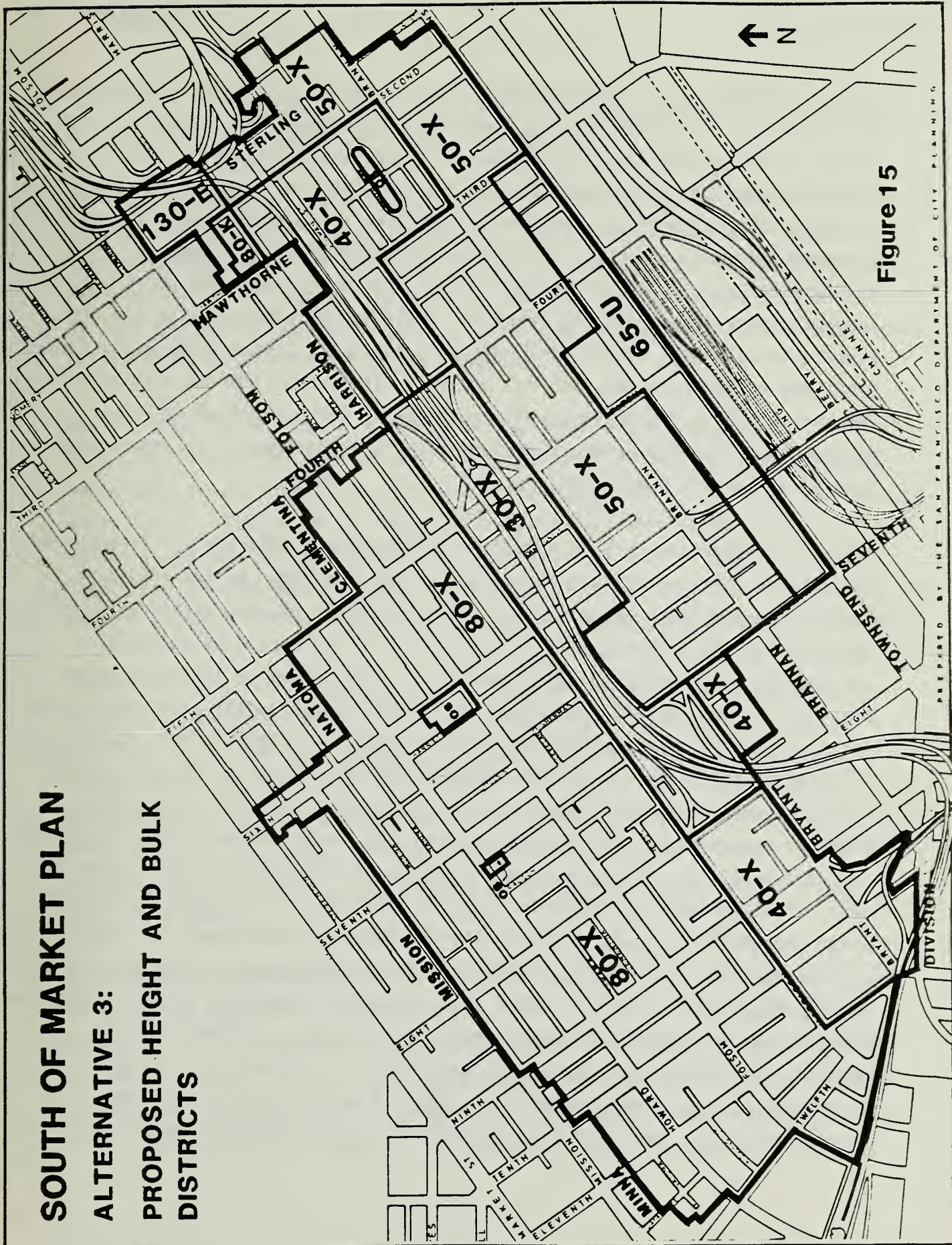


Figure 15

given in the Population and Housing Section, page 86. In summary: rents (and housing prices) are generally not sufficient to support new housing construction and this is not expected to change substantially by 2000; most sites are occupied by residential or commercial uses which would have to be displaced for new housing, thus creating potential controversy and making new construction more expensive; the SOM is not perceived as a desirable residential location and there are areas to the east of the SOM which currently promote new housing which are perceived as preferable to the SOM Plan/rezoning area - Rincon Hill, Rincon Point/South Beach, Yerba Buena Center (YBC) and the proposed Mission Bay project. It is expected that construction and absorption of new housing would continue in those surrounding areas through the year 2000 forecast period prior to large amounts of residential development in the SOM rezoning area.

Over the longer-term, beyond 2000, the development of housing in the adjacent areas cited above could lead to new housing in the SOM. As the greater downtown begins to be perceived as a more desirable residential location, the image of the SOM rezoning area as a housing location could be improved, encouraging more individuals to live there. This would be likely to occur first in the eastern SOM, the area nearest the redevelopment areas and Rincon Hill. Over time, new housing construction would be likely to occur further to the west as the image of the SOM improved and land values increased. This potential gentrification effect would encourage new housing construction. However, because most of the rezoning area that would be designated RC-4 under this alternative is fully developed and there is substantial non-residential uses, it would take considerably longer for the SOM Plan area to develop the image and amenities needed to encourage residential development as compared to surrounding areas. Further, future residential development which might occur within the SOM RC-4 district under this alternative would be likely to require displacement of industrial and business service uses, or demolition of existing affordable housing for new market rate construction. (Although, there is a "mixed income" requirement imposed on certain new residential development under the SOM Plan and therefore this Alternative which would

guarantee that a portion of all new construction was affordable to households with incomes no greater than 150% of the median.)

As with Alternative 2, this alternative would eliminate the SSO district along Second and Townsend Streets, thereby prohibiting new office development throughout the SOM. The reduced office development potential relative to the SOM Plan would not substantially impact office activity in the area within the by 2000 due to the current excess of available office space and the additional office space approved or under construction.

Beyond 2000, the office development implications of this alternative would be very similar to those discussed for Alternative 2. This alternative would contribute to development pressure on surrounding areas from lower-rent paying office uses. This would increase office rents in surrounding areas and increase the rate of development and absorption of office space at these locations: Mission Bay, Potrero, the C-3 district and the rest of the South of Market. Overall office use in the city could be reduced relative to the Plan.

Therefore, this alternative could preserve the SOM as a location for relatively low-cost space for service, light-industrial and like uses. (Service uses would be permitted throughout the RC-4 and SLI districts, light-industrial uses would not be permitted in the RC-4 district.) However, some of the uses which serve a downtown office client base and might otherwise benefit by the lower rents engendered by these controls, could be subject to a reduced demand for their services due to the overall reduction in office activity citywide.

The change of the HSL district to RC-4 for the area north of Harrison Street would reduce commercial FAR from 2.5:1 to 1:1 under this alternative. This change is not expected to substantially affect the forecasts for non-office activity through 2000, since the modest growth expected could be accommodated within those limits. Over the longer-term, the lower FAR would affect commercial development potential on individual sites throughout the RC-4

district and the potential for expanding commercial activity above the ground floor of existing buildings. These effects could result in less growth than otherwise and more spillover effects in other areas.

The area designated SSO under the SOM Plan would have an FAR of 3.0 and 4.0 to 1. Under Alternative 3 this area would be designated an SLI district and have an FAR of 2.5 to 1. Over the long-term, this reduced FAR limit would lessen the overall development potential for commercial activity in the area, resulting in less total employment and building space than would be expected with the SOM Plan. Due to the prohibition of new office uses, the rate of rent increase in the area for non-office uses would be lessened relative to the Plan, thereby preserving the SOM as a location for some lower-rent paying businesses.

Potential impacts upon land use character, urban design and significant buildings in the area would be comparable to Alternative 2. Less new construction and conversion of buildings in the area could preserve existing building scale, reducing the potential for alteration or demolition of architecturally rated buildings. However, the impacts of this alternative would not be expected to differ greatly from the SOM Plan in this regard, within the forecast period, for the reasons given under Alternative 2.

Over time, beyond the forecast period, existing uses could be demolished to allow for new residential development. This would most likely occur on sites where existing structures are underdeveloped relative to the maximum development permitted by the RC-4 controls and 80 foot height limit. In those cases, maximizing development potential on any given site under RC-4 controls would require including a residential component. (Since FAR does not apply to dwellings within R districts, this residential component could be additive to the full commercial development permitted on any given lot; a mixed-use development could include a commercial component equal to the maximum FAR plus a residential component up to the height limit and permitted dwelling unit density. A purely commercial development would be restricted to the 1:1 FAR

limit cited above.)

Given the reduction in employment associated with this alternative relative to the SOM Plan, total travel demand and impacts upon transit, traffic and parking would be correspondingly reduced. Over the longer-term, as more housing would be developed in the SOM, the disparity in travel demand generated by this alternative relative to the Plan would increase. It is likely that this alternative would allow for a higher percentage employees in the SOM, downtown and vicinity to reside near their place of work, thereby reducing the travel demand of a portion of this workforce. However, as with Alternative 2, there would not be substantial change in cumulative travel demand of the downtown and surrounding areas, or the region, as SOM employment and travel is not a considerable percentage of cumulative travel demand under any of the alternatives analyzed. Some of the reduction in SOM employment would shift to nearby areas and thus would still be included in cumulative travel demand at the regional screenlines.

Air quality impacts would be reduced consistent with the reduction in vehicle travel, and the decrease in total building space and accompanying building operation emissions in the area.

To the extent this alternative encourages additional housing in future years and workers in the SOM, downtown and vicinity reside in this housing, the commute trips of these employees would be reduced in distance thereby reducing emissions. Also, given the greater availability of transit in the SOM relative to most of the region's residential areas, it is likely that commute travel of new SOM residents would rely relatively more on transit and less on private vehicle commuting than at their previous residences. As transit travel is more efficient than private automobiles in terms of pollutant emissions per passenger miles travelled, any resulting increase in the transit (or walk) mode relative to auto use of the regional or downtown workforce, due to relocation to the SOM, would reduce overall air pollutant emissions.

Demolition, excavation, and construction of new buildings in the SOM area, and vehicle trips generated by this alternative and cumulative development, would generate total suspended particulate (TSP) emissions. This could contribute to an increase in the frequency of violations of the TSP standard in San Francisco, with concomitant health effects, although to a lesser extent than under the SOM Plan. No violations of CO standards were forecast to occur under the SOM Plan and therefore, none would occur under Alternative 3.

The differences in air quality emissions between the SOM Plan and this alternative (or any of the alternatives analyzed in this EIR) would not result in a measurable difference in regional air quality, nor change the region's performance with regard to meeting State and Federal air quality standards due to the small share of regional emissions attributable to the SOM.

There would be less energy consumption under this alternative than under the SOM Plan, as there would be reduced area-generated travel and less growth in building space. However, energy use would be less efficient to the extent that the reduction in development potential results in older, less energy efficient buildings remaining in their current use rather than rehabilitated as part of conversion to other uses, or demolished and replaced with new construction. To the extent there is new residential construction in the area relative to the Plan, there would be an increase in natural gas consumption.

The prohibition on new office space and accompanying reduction in demand for building space may encourage the retention of older and more hazardous structures with concomitant dangers to building occupants and visitors. (Although part of this reduced demand for office use could be partly offset by an increase in conversions to retail and service uses which would also trigger seismic upgrading.) Conversely, to the extent these same elements reduce the overall intensity of activity in the area relative to the SOM Plan, this alternative would reduce the numbers of people exposed to potential seismic hazards at any given time, and may encourage adaptive reuse and structural rehabilitation of the existing building stock.

As discussed, this alternative is likely to result in an increase in housing in the SOM Plan area, relative to the SOM Plan, although this would occur beyond the year 2000 forecast period. This future increase in resident population would expose more individuals to the seismic hazards of the SOM area including hazards from falling building materials, fire, and temporary disruption of public services. However, it is likely that newly constructed housing would be seismically safer than the structures that are replaced, as these buildings would be constructed in accordance with more stringent building codes. This would reduce hazards for occupants of these buildings during the seismic event.

Demand for public services and utilities to 2000 under this alternative would be somewhat less than those of the SOM Plan within the forecast period consistent with the reduction in area employment. In the longer-term, beyond the forecast period, increased housing in the SOM Plan area would result in a corresponding increase in demand for public services associated with increased resident population including, among other things, demands upon the limited open space resources of the SOM and need for additional school space.

The Department of City Planning has rejected this alternative, in part, for the same reasons that Alternative 2 was rejected. In summary, this alternative would eliminate the SSO district which the Department considers desirable because it allows for moderate office growth in an area which is substantially in office use at this time. The SSO district allows for continuity of land use between the C-3-0 (SD) district and the proposed Mission Bay Plan by providing less costly office space along the Second Street and Townsend Street corridors and prevents placing a substantial number of existing uses in non-conforming use status.

This alternative would create potential conflict between existing and future land uses within the RC-4 district. The area designated RC-4 under this alternative is the location of business service and industrial uses which the

SOM Plan is designed to protect. The introduction, over time, of high-density residential development and limited commercial use could create conflicts between new residential tenants and owners and existing light-industrial and service uses, bars, clubs and homeless programs all of which may generate, among other things, noise, odors and traffic impacts which would be perceived as undesirable by new residents.

New residential development under this Alternative could cause displacement of existing industrial and service uses in the SOM. New residential development may also require demolition of existing housing resulting in an irreversible loss of affordable housing resources.

D. ALTERNATIVE 4 - NO CHANGE - EXISTING PHYSICAL CONDITIONS

This alternative assumes no changes would occur in the existing physical environment in the SOM area over the 15 year forecast period. The SOM area would remain as described in the setting section.

Under this alternative the project-related impacts described in the main text of this EIR would not occur. The forecast growth in employment and building space would not take place within the SOM. Cumulative impacts associated with development in the rest of San Francisco and the region would still occur. Employment growth forecast for the SOM, and associated impacts on the environment would occur in other areas of San Francisco and the region, although the extent of this spillover effect cannot be quantified.

This alternative would not provide an opportunity for development of new or expansion of existing business service and light industrial uses and housing in the SOM.

VII. SHORT-TERM vs. LONG-TERM CONSEQUENCES OF ADOPTING THE PROPOSED SOM PLAN

In the long term, implementation of the South of Market Plan would conserve existing housing and service and light industrial land uses in the area, and would accommodate an approximate 30% increase in employment by permitting some new commercial/industrial development. On balance, the short-term consequence of the Plan would be maintenance of the present character of the area. Over the longer term, some increased commercial development could occur in the Plan area, although new commercial uses would be more like existing commercial uses in the SOM than would be the case under current zoning controls. Located near the Downtown C-3 and Civic Center districts, the SOM Plan area also would continue to offer housing to downtown employees who would otherwise be commuting over longer distances.

Implementation of the proposed Plan in conjunction with cumulative growth examined in the EIR would lead to cumulative increases in demand on regional and local transportation systems, and resultant violations in air quality standards for Total Suspended Particulates (TSP), with concomitant health effects and reduced visibility. Contribution of development under the Plan to these effects would be relatively small.

VIII. IRREVERSIBLE ENVIRONMENTAL CHANGES

Implementation of the South of Market Plan would allow less development in the area than previous zoning, though some development would still be permitted and could be expected to occur. Construction materials and energy used for the new development would involve use of some non-renewable resources. Continued development would also result in continuing increases in travel demand. The additional trips, plus construction activities from new development, in combination with other ongoing development and trip-increasing activities in San Francisco and the region, could subject the region to future air quality problems from increases in TSP emissions.

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APPENDICES
NOTICE THAT AN
ENVIRONMENTAL IMPACT REPORT
IS DETERMINED TO BE REQUIRED

Date of this Notice: July 24, 1987

Lead Agency: City and County of San Francisco, Department of City Planning
450 McAllister Street - 5th Floor, San Francisco, CA 94102

Agency Contact Person: Jim McCormick

Telephone: (415) 558-5261

Project Title: 85.463 ETZ; South of Market Plan
and Rezoning.

Project Sponsor:
Department of City
Planning
Project Contact Person:
Jim McCormick

Project Address: Area generally bounded by Second, Townsend, Division,
Thirteenth and Mission Streets, Assessor's Block(s) and Lot(s): All of blocks
3516 through 3525, 3528, 3726 through 3732, 3753 through 3762, 3775 through
3779, 3784 through 3788, and portions of Assessor's Block 3509, 3510, 3511,
3703, 3704, 3725, 3726, 3733, 3749, 3750, 3752, 3763, 3764, 3774, 3780, 3789.

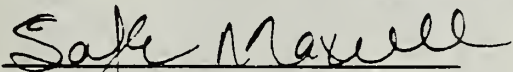
City and County: San Francisco

Project Description: Proposed amendments to the City Planning Code and Zoning
Maps to establish the following use districts: HSL (Housing/Service Light
Industrial); SLI (Service/Light Industrial); SSO (Service/Secondary Office);
RM-3 (Mixed Residential Medium Density); RC-4 (Residential-Commercial
Combined, High Density); RC-2 (Residential-Commercial Combined, Moderate
Density and P (Public) and to reclassify Height and Bulk districts within the
same area to 40-X, 50-X, 65-B, 80-X, 40X, 85-B, 130-E, or O.S.

THIS PROJECT MAY HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT AND AN
ENVIRONMENTAL IMPACT REPORT IS REQUIRED. This determination is based upon the
criteria of the Guidelines of the State Secretary for Resources, Section 15063
(Initial Study), 15064 (Determining Significant Effect), and 15065 (Mandatory
Findings of Significance), and the following reasons, as documented in the
Environmental Evaluation (Initial Study) for the project, which is attached.

Deadline for Filing of an Appeal of this Determination to the City Planning
Commission: August 3, 1987.

An appeal requires: 1) a letter specifying the grounds for the appeal, and;
2) a \$50.00 filing fee.



for BARBARA W. SAHM

Environmental Review Officer

ENVIRONMENTAL EVALUATION CHECKLIST
(Initial Study)

File No: 85.463 ETZ Title: South of Market Plan and Rezoning

Street Address: Area generally bounded by Second, Townsend, Division, Thirteenth and Mission Streets Assessor's Block/Lot: Whole Blocks and Portions as listed below.

Initial Study Prepared by: Jim McCormick

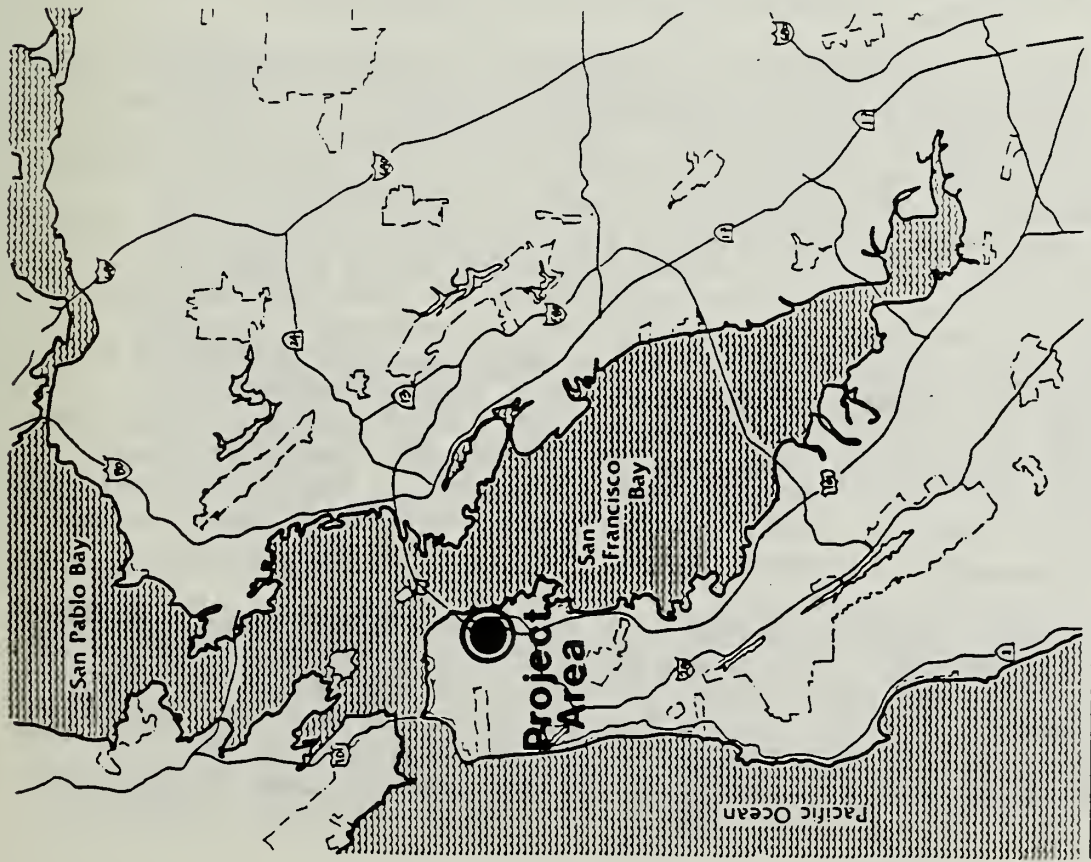
I. PROJECT DESCRIPTION

A. INTRODUCTION

The proposed project consists of amendments to the San Francisco Master Plan pertaining to the South of Market Area (SOMA) and implementation of these policies through proposed revisions to the City Planning Code and Zoning Maps. The guiding policies and objectives are contained in the South of Market Plan, Proposal for Citizen Review, (hereafter the SOM Plan) published by the Department of City Planning in June 1985. The Plan is the culmination of the Department's research and analysis of land use issues in the South of Market (SOM), conducted over the last three years. As will be discussed below in the Background section, the proposed zoning controls which accompanied the SOM Plan have undergone revisions in response to public input since publication of the Plan. The analysis contained in this document is based on forecasts of future employment and space use based on the zoning controls as adopted by the City Planning Commission on an interim basis in October 1986. These controls are proposed for adoption on a permanent basis. Although some modification in the proposed controls could be anticipated in response to continuing public input, it is expected that permanent controls would be substantially the same as the current interim ordinance.

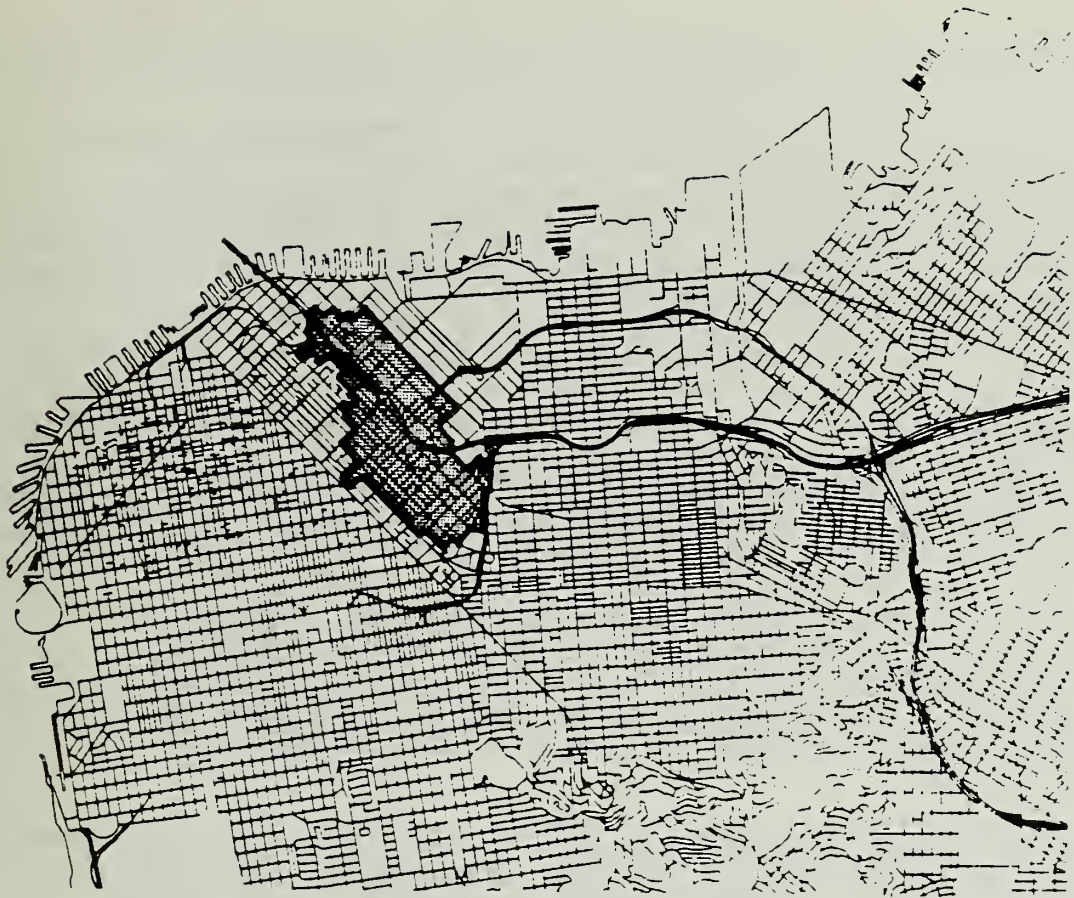
The proposed Master Plan policies and accompanying zoning controls are designed to preserve this area, generally bounded by Second, Townsend, Division, Thirteenth and Mission Streets, adjacent to the Downtown (C-3) districts, for rent-sensitive service, industrial, general commercial and residential uses. This would be accomplished by establishing separate use subdistricts, and directing opportunities for higher intensity, higher rent-paying land uses to areas that are least likely to displace or disrupt existing lower scale, lower-rent activities.

The proposed reclassification would apply to those sections of SOMA that are not already addressed in the City Planning Department's Downtown Plan, Rincon Hill Plan, and the proposed Mission Bay Plan, nor the Rincon Point-South Beach Redevelopment Plan and Yerba Buena Center Redevelopment Plan. The project would encompass all of Assessor's Block(s) and Lot(s): 3516 through 3525, 3528, 3726 through 3732, 3753 through 3762, 3775 through 3779, 3784 through 3788, and portions of Assessor's Block 3509, 3510, 3511, 3703, 3704, 3725, 3726, 3733, 3749, 3750, 3752, 3763, 3764, 3774, 3780, and 3789. The location of the project in a regional context is shown in Figure 1. The project's specific location is shown in Figure 2.



SOUTH OF MARKET PLAN

Figure 1 REGIONAL LOCATION MAP



SOUTH OF MARKET PLAN

Figure 2 SITE LOCATION MAP

B. BACKGROUND

The recommended objectives and policies of the South of Market Plan and its implementing zoning measures culminate an extensive data collection and analysis effort by the Department of City Planning of land use issues in SOMA. The Plan responds to a directive from the Board of Supervisors in December 1983, when it adopted an interim ordinance establishing the South of Market Industrial and Housing Conservation Special Use District (Industrial/Housing SUD). The Industrial/Housing SUD became the first of three differing zoning measures which were adopted for the area as planning for SOMA progressed. The ordinance was proposed in response to concerns that office development pressure due to downtown office growth to the north could cause potential adverse effects on SOMA, causing an undesirable intensification of use, and displacement of existing businesses and residents. The area contained in the interim Industrial/Housing SUD included a strip north of Folsom Street (generally bounded by Minna, 4th, Folsom and 12th Streets) that were permanently zoned for downtown support services (C-3-S). This interim zoning control, which superceded the permanent zoning controls for 18 months, included strict controls on office development. Office space was limited to a 2.0 to 1 Floor Area Ratio (FAR), and parking was required at the ratio of one parking space per 250 sq. ft. of occupied floor area, at least twice the requirement applied to offices located outside the Industrial/Housing SUD.

During the interim period, the Department of City Planning produced a new area plan and zoning controls for the downtown area, the Downtown Plan, which was ultimately adopted in 1984. The Downtown Plan included all areas with an underlying permanent C-3 zoning. The new permanent zoning controls reduced FAR to 2.0 to 1 for the area within the Industrial/Housing SUD with an underlying C-3-S zoning, consistent with the interim controls.

It was also during this period that the Department began its analysis and held a series of public meetings in the SOMA community in order to develop the objectives and policies of the SOM Plan. The SOM Plan covers a larger area than that contained in the Industrial/Housing SUD. It was expanded to include land to the east of the SUD (and excludes smaller areas located in the northeast and southwesternmost portion of the SUD) based on conclusions of the Department's planning studies and concerns expressed by the community. Following publication of the Plan for public review in June 1985, additional public meetings and hearings were held regarding the proposals contained therein, resulting in modifications in the proposed controls in response to the issues that were raised. On October 2, 1986, interim controls were adopted for SOMA by the City Planning Commission. These interim controls were adopted in order to allow the completion of environmental and legislative review necessary for adoption of new permanent controls. The interim controls are effective until April 2, 1988. Further public review and comment on the proposal will be solicited prior to adoption of the permanent controls.

The project as described below reflects the zoning controls adopted in October 1986. Therefore, the maps, figures and specific zoning controls cited in this text differ slightly from those contained in the June 1985 SOMA Plan. The modifications made in the controls are expected to more effectively implement the intent of the SOM Plan as presented in the stated objectives and policies. The Objectives and Policies of the Plan have not been changed. The SOM Plan will be revised prior to adoption of permanent controls to reflect

the latest provisions of the implementing ordinance. No substantial changes in the Plan's stated objectives are expected.

C. PROJECT CHARACTERISTICS

The South of Market Plan proposes policies and objectives to guide future development in SOMA into the next century. Currently, SOMA contains lower-rent commercial space for uses such as industrial and home and business services, which provide goods and services to downtown San Francisco and to regional markets. Due to these relatively low rents SOMA contains a significant supply of affordable housing units.

The objectives of the South of Market Plan are to reserve SOMA for the continuation and expansion of these types of uses. They are presented in four major topical areas: residential space; business activity; transportation; and neighborhood livability. The stated objectives of the plan are summarized below:

Residential Space. Preserve existing affordable housing and encourage the development of new affordable housing. Promote development of in-fill housing and mixed-use development. Promote the development of artists' live/work units in commercial space and provide a mechanism to legalize existing live/work units.

Business Activity. Protect existing, and facilitate the expansion of, industrial, artisan, home and business service, and neighborhood-serving retail and community service activities. Limit more lucrative uses, such as office space, to specific locations to reduce potential displacement of existing lower-rent business service and industrial uses.

Transportation. Provide adequate transportation services to maintain the economic vitality of the South of Market, and to improve the livability of the area for residents, workers and visitors. Promote transit as the primary travel mode to and from SOMA and other parts of the City and region, minimize auto traffic, provide adequate parking and loading space for SOM businesses and residents, improve SOM pedestrian circulation and maintain the availability of rail freight to existing SOM users.

Neighborhood Livability. Preserve existing amenities for SOM residents, workers and visitors. Preserve the existing scale of development, protect architecturally or historically significant buildings, create new parks and recreation facilities and encourage the location and expansion of essential neighborhood-serving community services.

In order to implement the objectives of the SOM Plan the Department of City Planning has recommended amendments to the City Planning Code and zoning maps. The proposed controls would place additional height, building bulk, and land use restrictions on, and allow additional uses for, subject properties presently classified as RH-2 (House, Two-Family); RH-3 (House, Three Family); RM-2 (Mixed Residential, Moderate Density); RM-3 (Mixed Residential, Medium Density); RC-2 (Residential-Commercial Combined, Moderate Density); RC-3 (Residential-Commercial Combined, Medium Density); C-3-S (Downtown Support);

C-3-G (Downtown General Commercial); C-M (Heavy Commercial); M-1 (Light Industrial); M-2 (Heavy Industrial); and P (Public) use districts.

The proposed controls designate seven use districts (see Figure 3, three are newly created commercial districts; three are residential use districts; and one is a P (Public) use district. The three new districts are identified as the Housing/Service/Light Industrial (HSL) district; the Service/Light Industrial (SLI) district; and the Service/Secondary Office (SSO) district. The three residential districts would be zoned for RM-3; RC-4; and RC-2.

The proposed project also includes seven building height/bulk district classifications (see Figure 4). Three of them would not regulate the bulk of newly constructed buildings, and are denoted with a bulk designation of "X": 40-X; 50-X; and 80-X. A fourth height/bulk classification, 40-X/85-B, would permit a base 40 foot height with no bulk restrictions; between 40 and 80 feet in height, the maximum building length would be 110 feet, and the maximum diagonal building dimension would be 125 feet. Within the 40-X/85-B district, any construction above 40 feet would require conditional use authorization. Conditional use approval for additional height would require the provision of affordable housing and/or artist live/work space, for a period of 20 years. ("Affordable" housing is defined by Section 6932 of the California Administrative Code as within 150% of the City's median income.) The fifth district, 65-B, requires a building setback at the 50 foot height level, wherein the additional building between 50 and 65 feet would be limited by the same building dimensions described above in the 40-X/85-B district. The sixth district, 130-E would allow a base height of 65 feet with no bulk controls, between 65 and 130 feet in height, the maximum building length would be 110 feet and the maximum diagonal dimension would be 140 feet. The seventh height district, O.S., controls building heights within public park sites in accordance with the objectives, policies and principals of the Master Plan.

Certain elements of the proposed controls would apply uniformly throughout all of the proposed zoning districts. The major provisions of the interim controls which would apply throughout SOMA are listed below:

Permitted Uses. All districts would permit live/work space, and arts-related space as principal uses. Arts space is defined as space necessary to accommodate the production, performance and/or exhibition of cultural arts-related activities (exclusive of movie theaters, dance halls, or other similar adult or nighttime entertainment activities).

Rear Yards and Open Space. The project includes different open space standards for residential and commercial development.

Residential Use - A 25% rear yard would be required at the first level of residential use. Open space standards of 36 sq. ft. per unit would be established for live/work units.

Commercial Use - The proposed controls establish an open space requirement for all commercial and industrial uses, at the following ratios: one sq. ft. of open space per 250 gross sq. ft. of general commercial development, which includes retail, personal service, wholesale trade space, and home and business service space (1:250); 1:120 for manufacturing and light industrial space, institutional and like uses; and 1:90 for new and converted office space.

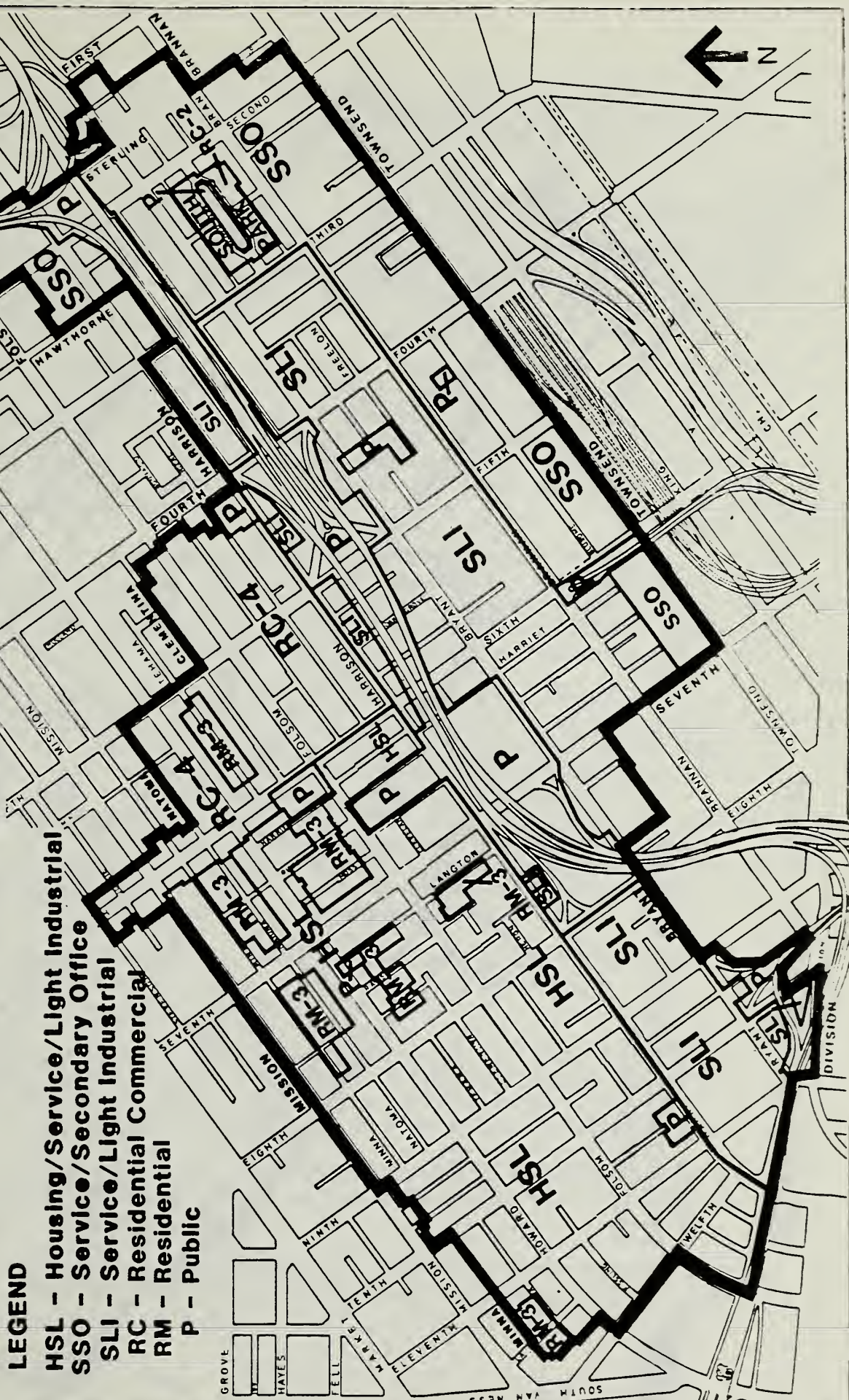


SOUTH OF MARKET PLAN

Figure 3
PROPOSED ZONING CONTROLS

LEGEND

- HSL - Housing/Service/Light Industrial
- SSO - Service/Secondary Office
- SLI - Service/Light Industrial
- RC - Residential Commercial
- RM - Residential
- P - Public



Alternatively, the controls allow payment of an in-lieu fee at the following rates to provide off-site open space resources: \$0.67 per foot for general commercial uses; \$1.35 per foot for manufacturing and light industrial; and \$1.80 per foot for office use.

Parking. Several new parking requirements would be established: workspace for architects and engineers would require one parking space per 1000 sq. ft. of floor area (1:1000); SOM business offices would have a 1:750 requirement; artist and artisan production and performance spaces and live/work units would have a 1:1500 requirement. All required parking spaces for dwelling units could be compact car-sized.

Modification of parking requirements would be permitted through an administrative review process described below. Reduction in parking requirements may be sought for the uses listed below, provided that they are justified by the anticipated auto usage of future residents and visitors: dwelling units; SOMA nighttime arts-related performance or exhibition space; live/work units provided within existing buildings; group housing (residential hotels) on Sixth Street.

Alternatively, the proposed controls allow payment of a fee in-lieu of providing required off-street parking for non-residential development, of \$15,000 per required parking space. The in-lieu fee would be administered by the San Francisco Parking Authority, which is empowered to construct public parking facilities within walking distance of subject development sites.

Floor Area Ratio (FAR). The proposed project exempts certain types of building area in SOMA from the calculation of gross floor area (which therefore would not count towards the FAR limit): residential space; floor area devoted to childcare facilities; ground floor space devoted to personal services, restaurants, and retail sales of goods intended to meet the convenience shopping needs of nearby workers and residents (not to exceed 2500 sq. ft. per use except for grocery stores, which may not exceed 10,000 sq. ft.); and floor area devoted to live/work units when such floor area exceeds the basic FAR limit, provided the units remain in live/work occupancy for at least 20 years and are never converted to wholly commercial use.

Street Trees. The proposed controls would require installation of street trees within the sidewalk space for all new construction or major rehabilitation projects within SOMA districts.

Wind and Shadow. The proposed controls would require buildings to be shaped so as to reduce substantial shadow impacts on public open spaces and other similar public spaces. It would require wind baffling measures for new buildings and building additions exceeding 40 feet in the 40-X/85-B.

Screening of Rooftop Structures. Provisions for screening rooftop mechanical equipment would be required in such a way as to integrate such fixtures into the overall building design.

Conversion or Demolition of Dwelling Units. Demolition, or conversion to any other use, of a dwelling unit in any SOM district would require conditional use authorization.

Administrative Review. Exemptions from parking, rear yard, and open space standards, as described above, could be granted by the Zoning Administrator through an administrative review process established by Section 307(g) of the proposed controls, which provides for initiation, notice and appeal procedures.

SOUTH OF MARKET RM-3 DISTRICT - Special Provisions

The base RM-3 classification is defined in Section 206.1 of the Planning Code. In addition to those provisions already specified in the Code, properties in the seven proposed RM-3 districts of SOMA would be subject to the provisions described below:

- o 40 foot height limit;
- o Office, hotels, motels, hostels, inns, nighttime entertainment, movie theaters, or restaurant would not be permitted within non-conforming use structures;
- o Existing non-residential use structures would become non-conforming use structures subject to the provisions of Sections 182 through 186 of the City Planning Code.

SOUTH OF MARKET RC-4 DISTRICT - Special Provisions

The base RC-4 classification is defined in Section 206.3 of the Planning Code. Properties in the RC-4 district would be subject to existing provisions of the Planning Code as well as the provisions listed below:

- o 40 to 80 foot base height limits, with conditional use opportunities in the 40-X/85-B district to build up to 85 feet;
- o Offices, hotels, motels, hostels, nighttime entertainment, or movie theaters would not be permitted;

SOUTH OF MARKET RC-2 DISTRICT (SOUTH PARK)

Properties in the South Park RC-2 district would be subject to Planning Code provisions of the existing RC-2 district classification, with the following exceptions:

- o Nighttime entertainment, hotels, motels, hostels, and movie theaters would not be permitted.

HOUSING/SERVICE/LIGHT INDUSTRIAL (HSL) DISTRICT

Properties in the HSL district would be subject to the following provisions:

- o 40 to 65 foot height limits;
- o Building FAR of 2.5:1;
- o Residential density of one dwelling unit per 200 sq. ft. of lot area;
- o One parking space per dwelling unit;
- o Housing, retail, general commercial, home, personal and business services, light industrial, institutional, cultural arts and artisan, parking and residential activities would be permitted as principal uses;

- o Office use, hotels, motels, hostels, inns, movie theaters, adult or nighttime entertainment activities, and wholesale designer showrooms would not be permitted.

SERVICE/LIGHT INDUSTRIAL (SLI) DISTRICT

Properties in the SLI district would be subject to the same provisions as the HSL district, with the exception that residential use would not be permitted and height limits would range from 30 to 50 feet. Existing dwelling units may remain as non-conforming uses without a termination date.

SERVICE/SECONDARY OFFICE (SSO) DISTRICT

Properties in the SSO district would be subject to the same provisions as the HSL with the following exceptions:

- o Building height limits would range from 40 to 130 feet;
- o Properties within the 80 and 130 foot height districts and the 65 foot height district bounded by Brannan or Bluxome, Townsend, Third and Seventh Streets would be permitted a 4:1 FAR; the FAR for properties within the 40 and 50 foot height district would be 3.0:1;
- o Office use would be a principal permitted use;
- o Nighttime entertainment activities would be permitted;
- o New residential construction would not be permitted.

II. SUMMARY OF PROJECT EFFECTS

The project as described above is examined in this Initial Study to identify its potential impacts on the environment. The impacts analysis is based on forecasts of increases in employment and building space in the area to the year 2000/1/. The forecast increases (decreases) in building space and employment by business activity are as follows: total building space is forecast to increase by 1.4 million square feet from 17.6 to 19 million square feet. Space devoted to office uses is expected to increase from approximately 4 million square feet to 6.9 million square feet. A minor decline is expected in space devoted to other uses in the area from 1985-2000 as follows (in million square feet): services from 3.4 to 3.3; sales/distribution from 5.8 to 5.1, manufacturing from 1.6 to 1.5, vacant space from 2.9 to 2.1. The change in land uses from now to 2000 reflects a change in use of existing space in terms of both type and intensity of use, as well as an increase in building space.

Employment in the rezoning area is forecast to grow by 6,850 jobs between 1985 and 2000. The business activities which are expected to increase are offices, sales/showrooms and /convenience retail/entertainment and services. Employment in manufacturing, distribution activities and hotel/motel uses is projected to remain constant or decline.

Offices are expected to show the most growth, with an increase of approximately 6,850 jobs. Within office activity sub-categories, employment is projected to increase as follows: back office by 1,535; government office by 400; other office by 4,915. Sales/showroom employment is expected to grow by approximately 275 jobs. Convenience retail/entertainment employment is forecast to grow by 715 and service employment by 75.

For those business activities which are projected to show a decline or no growth, the expected changes in employment between 1985 and 2000 are as follows: distribution -900; manufacturing -165; and hotel/motel no change.

Population and housing within SOMA is not expected to change significantly over the forecast period. This conclusion is based on the following factors: census data for 1970-1980 shows a slight population decline for SOMA, approximately five percent; a comparison of 1980 census data and the 1984 SOMA land use survey prepared by the Department of City Planning showed a slight decline in housing in SOMA in that period; some increase in persons/household may occur as Asian immigrants locate in SOMA (this trend is supported by 1970-1980 census data which shows a change in SOM racial makeup, with an increasing proportion of Asian households); a simultaneous trend towards "gentrification" could reduce the number of persons per household in other segments of SOMA population. Therefore, for this analysis it was assumed that both population and housing would remain relatively constant through the year 2000.

A. SIGNIFICANT EFFECTS

Based on the above assessment of project impacts, it was determined that the potentially significant environmental effects of either the project itself, or the project in conjunction with cumulative impacts of other projects in the vicinity include impacts upon: land use, resident patterns and housing, employment, transportation, air quality, energy use, geology/seismicity and fire, sewer and police services.

B. INSIGNIFICANT EFFECTS

Effects determined to be insignificant either in themselves or with the mitigations proposed as part of the project are listed below. These topics require no further investigation and will not be discussed in the EIR.

Urban Design and Visual Quality: The proposed project would generally maintain or reduce existing height limits and would not inherently result in obstruction of scenic views, or vistas, cause substantial light or glare or result in substantial negative aesthetic impacts. The Plan includes requirements for new commercial development to provide new open-space on-site or contribute an in lieu open-space fee. Individual development projects would be subject to environmental analysis on a case-by-case basis at the time they are proposed, whereupon specific design-related issues such as sun shading, wind acceleration views and architectural integrity would be evaluated.

Noise: Impacts of construction and operational noise on surrounding land uses would be controlled by the San Francisco Noise Ordinance (Chapter 29 of the City Administrative Code). Multi-family residential units impacted by surrounding noise levels would be subject to State-mandated Title 24 noise insulation standards. The Environmental Protection Element of the Master Plan has established guidelines for compatibility of land uses with the surrounding noise levels. Proposed new projects could be subject to additional noise mitigations measures, or possible disapproval, consistent with the Master Plan guidelines.

Utilities/Public Services: The demand for public services and utilities generated by the project could be met by existing facilities, with the exception of fire, sewer and police services.

Biology: The project would not threaten any endangered plant or animal species nor cause a major impact on existing vegetation or wildlife.

Water: The project would not have an effect upon public water supplies or storm-water run-off.

Hazards: Seismic-induced hazards will be discussed in the EIR. Other than potential impacts from an earthquake, the project would not create a potential fire or health hazard.

Prehistoric/Cultural/Historic Resources: Individual projects which could disturb archeological resources would be reviewed on a case by case basis and subject to mitigation as necessary. (See mitigations section, page 24). An assessment of the historic/architectural merits of buildings in the rezoning area was undertaken in conjunction with the SOMA planning effort. Through, this process the Department has identified a number of buildings of architectural/historic importance and recognized an area considered eligible for historic district status. This review process could provide the basis for subsequent actions by public agencies to protect buildings of architectural/historic merit from demolition or alteration. These actions would take place independently of the rezoning process.

III. ENVIRONMENTAL EVALUATION CHECKLIST

A. COMPATIBILITY WITH EXISTING ZONING AND PLANS	Not	
	Applicable	Discussed
1) Discuss any variances, special authorizations, or changes proposed to the City Planning Code or Zoning Map, if applicable.	_____	<u> X </u>
*2) Discuss any conflicts with any adopted environmental plans and goals of the City or Region, if applicable.	_____	<u> X </u>

Overall, the project would not conflict with environmental plans or goals of the City or Region. The relationship of the project and its alternatives with objectives and policies of the San Francisco Master Plan will be addressed under the relevant impact topics in the EIR. The South of Market Plan would be subject to review and adoption by the City Planning Commission as a new area plan of the Master Plan. The project would also necessitate amendments to the City Planning Code and Zoning Maps.

Prior to taking action on adoption of either the Plan or its implementing

legislation, the City Planning Commission would also have to review the project against the eight priority policies mandated by Proposition M, which was approved by the voters of San Francisco in November 1986. These policies are: the preservation and enhancement of neighborhood-serving retail uses; the protection of neighborhood character; preservation and enhancement of affordable housing; discouragement of commuter automobiles; protection of industrial and service land uses from commercial office development and enhancement of resident employment and business ownership; earthquake preparedness, landmark and historic building preservation; and protection of open space.

B. ENVIRONMENTAL EFFECTS

1) <u>Land Use - Could the project:</u>	YES	NO	DISCUSSED
* (a) Disrupt or divide the physical arrangement of an established community?	—	<u>X</u>	—
(b) Have any substantial impact upon the existing character of the vicinity?	<u>X</u>	—	<u>X</u>

The mix of land uses and the intensity of development in the area is subject to change over time. The interaction of land use regulation and real estate market forces under each of the alternatives would effect the direction and extent of these changes. Land Use impacts will be discussed in the EIR.

2) <u>Visual Quality - Could the project:</u>	YES	NO	DISCUSSED
* (a) Have a substantial, demonstrable negative aesthetic effect?	—	<u>X</u>	<u>X</u>
(b) Substantially degrade or obstruct any scenic view or vista now observed from public areas?	—	<u>X</u>	<u>X</u>
(c) Generate obtrusive light or glare substantially impacting other properties?	—	<u>X</u>	<u>X</u>

Urban Design, Wind and Shadow

SOMA contains a unique mix of buildings containing light-industrial, manufacturing, commercial and residential uses which are interspersed throughout the area, such that in many parts of SOMA there is no distinct land use pattern. The topography of the area is generally flat, reflecting its original profile of salt water marshes which were gradually filled during the late nineteenth century. The grid pattern includes blocks which vary in size but are generally considerably larger than those north of Market Street and throughout the rest of the city.

The scale of development is generally low-rise, two to five story buildings of concrete, brick and wood construction materials. The large majority of existing development is less than 50 feet in height.

Architecturally, many of the commercial buildings share a common industrial character. The style of the buildings range from pre-20th century industrial style to high-style Art Deco buildings of the 1930's and 1940's. Although the mixture of SOM business activities has resulted in a wide variety of commercial and industrial building types, most buildings share common architectural elements including scale and proportion, texture, materials and patterns of facade and window treatments.

Residential buildings generally are built in the Edwardian style, and grouped in enclaves along the interior side streets. These buildings are usually three-story flats and apartments consistent with the low-rise character of the area. Taller buildings devoted to residential hotel use are located along Sixth Street. These structures range from approximately 40 to 80 feet in height.

The project proposes height limits which would maintain the existing scale of the neighborhood. Proposed height limits would be 85 feet or less with the single exception of a small portion of the northeast corner of the Plan area which would allow buildings up to 130 feet in height. (This area generally is occupied by existing and approved development which meets or exceeds the limit. Therefore, few new proposals for construction would be expected in this area.) Within the proposed 40-X/85-B height district, buildings taller than 40 feet could be permitted with conditional use authorization only if structure does not cause adverse wind acceleration, defined as 11 mph in pedestrian areas and 7 m.p.h. in public seating areas. An exception could be granted only if these standards cannot be achieved without creating an unattractive or ungainly building form, or unduly restricting the development potential of the building site, see the mitigations section page 24.

Existing wind conditions in SOM are calm relative to other areas of San Francisco. SOMA is sheltered from the prevailing winds from the Pacific Ocean by topographic and structural elements. Both the low-scale character and level terrain in SOMA reduce potential for wind acceleration. Although specific development proposals would be assessed on a case-by-case basis, given the existing climactic conditions and the generally low-scale height limits permitted by the proposed rezoning, development consistent with the proposed controls would be unlikely to cause adverse wind acceleration or

create a substantial negative aesthetic effect. (See item 13 for a discussion of an assessment of the architectural/historic significance of buildings in the study area which was prepared in conjunction with the SOMA planning effort).

Sun shading impacts from development allowed under the proposed Plan cannot be estimated without specific proposals including the design details for new structures. Therefore, shadow impacts of new construction would have to be evaluated on a case-by-case basis. Open space owned by the Recreation and Park Department would be protected by Proposition K which generally forbids new shadow from any building taller than 40 feet on public park space under their jurisdiction. Currently in SOMA this include the South park green, a mini-park at Langton and Howard and property at the northwest corner of Sixth and Folsom Streets where a open space and recreation site has been approved and will be constructed by the Recreation and Park Department.

The project does not contain recommendations which would inherently result in obstruction of scenic views or vistas, or in substantial negative aesthetic impacts. Similarly, the project would not specifically promote uses which are likely to cause substantial light or glare. Individual projects which could have such effects would be subject to separate environmental analysis at the time they are proposed.

Pedestrian Amenities and Open Space

SOMA is one of the areas of San Francisco which is generally sunny and not subject to frequent fog covering. SOMA's wide streets and low-rise character provide ample sunlight to streets, sidewalks and open space. However, the amenities of the built environment are limited. Open space is very scarce in SOMA. SOMA is identified in the Open Space Element of the Master Plan as a high need neighborhood. These neighborhoods are described as, "...the more densely populated, older areas of the city where low-income, minority group populations are concentrated, where there are large numbers of young and elderly, and where people have less mobility and financial resources to seek recreation outside of their neighborhood."/2/ Existing public parks in the study area are limited to the South Park green (bounded by 2nd,3rd,Bryant & Brannan Streets) and a small public park at Langton & Howard Streets.

In addition there are two paved playground facilities, one at Bessie Carmichael School at Folsom and Columbia Streets, and another at the Filipino Education Center at Fourth and Harrison Streets. A 1.9 acre site at the corner of Sixth and Folsom Streets is presently being designed as a park and recreation facility. Residents of the area also frequently make use of the open space on top of Moscone Center in the YBC area. Additional open space will be created in the San Francisco Redevelopment Area's proposed Yerba Buena Gardens project opposite Moscone Center with construction expected in the early 1990's.

The proposed Plan would impose an open space requirement on all new commercial development at specified rates or, alternatively, payment of an in-lieu fee for the development of off-site open space amenities. Through these measures, potential adverse impacts on open space would be mitigated at the project level. The required open space area ratios and in-lieu fee amounts are stated in the mitigations section, page 24.

3) <u>Population</u> - Could the project:	YES	NO	DISCUSSED
* <u>(a)</u> Induce substantial growth or concentration of population?	<u>X</u>	<u> </u>	<u>X</u>
* <u>(b)</u> Displace a large number of people (involving either housing or employment)?	<u> </u>	<u>X</u>	<u>X</u>
<u>(c)</u> Create a substantial demand for additional housing in San Francisco, or substantially reduce the housing supply?	<u>X</u>	<u> </u>	<u>X</u>

The project includes recommendations to maintain the existing housing stock and to encourage the creation of new in-fill housing. The project also proposes land use controls intended to protect existing light industrial and business service uses in the area and to provide for their future expansion. Therefore, the project would not result in the displacement of a large number of people.

Increased employment potential in the area under the Plan may result in additional housing demand. Housing demand, employment and growth inducement will be discussed in the EIR.

4) Transportation/Circulation Could the project:	YES	NO	DISCUSSED
* (a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system?	<u>X</u>	<u>—</u>	<u>X</u>
(b) Interfere with existing transportation systems, causing substantial alterations to circulation patterns or major traffic hazards?	<u>X</u>	<u>—</u>	<u>X</u>
(c) Cause a substantial increase in transit demand which cannot be accommodated by existing or proposed transit capacity?	<u>X</u>	<u>—</u>	<u>X</u>
(d) Cause a substantial increase in parking demand which cannot be accommodated by existing parking facilities?	<u>X</u>	<u>—</u>	<u>X</u>

The project would contribute to cumulative impacts on existing transportation systems. Project and cumulative impacts on traffic, transit and parking will be discussed in the EIR.

5) Noise - Could the project:	YES	NO	DISCUSSED
* (a) Increase substantially the ambient noise levels for adjoining areas?	<u>—</u>	<u>X</u>	<u>X</u>
(b) Violate Title 24 Noise Insulation Standards, if applicable?	<u>—</u>	<u>X</u>	<u>X</u>
(c) Be substantially impacted by existing noise levels?	<u>—</u>	<u>X</u>	<u>X</u>

New construction which would take place in the study area in accordance with the proposed controls would temporarily raise noise levels. Typical construction noise levels range from about 85 dBA to 90 dBA at a distance of 50 ft./3/ This is loud enough to raise interior noise levels (with windows closed) to 60 dBA or greater in buildings within 150 ft. (about one-half block) of the construction site. These noise levels require raising one's voice to be heard, and are disruptive to concentration and work efficiency. Piledriving produces noise levels of about 105 dBA at 50 ft./4/, loud enough to raise interior noise levels to 60 dBA or greater within about 1,500 ft. of the construction site (about four to five blocks) for locations with no intervening buildings to block some of the sound. Although construction noise at specific sites is temporary, the collective effects of a number of buildings under construction simultaneously may make construction noise a problem at specific locations.

Construction noise is regulated by the San Francisco Noise Ordinance.(Chapter 29 of the City Administrative Code). The Ordinance requires that sound levels of construction equipment other than impact tools not exceed 80 dBA at 100 feet. Impact tools (jackhammers, pile drivers, impact wrenches) must have both intake and exhaust muffled to the satisfaction of the Director of Public Works. Section 2908 of the ordinance prohibits construction work at night from 8:00 p.m. to 7:00 a.m. if noise would exceed the ambient noise level by 5 dBA at the project property line, unless a special permit is authorized by the Department of Public Works.

It is not feasible to assess site-specific construction impacts at a plan-level stage. Individual projects would be subject to environmental review and subsequent mitigation measures as appropriate. The proposed controls are preservation oriented. To the extent the proposed rezoning preserves existing uses, overall construction in future years would be correspondingly reduced relative to existing or less restrictive zoning controls.

In addition to construction-associated noise impacts, operational noise would be regulated by Section 2909 of the San Francisco Noise Ordinance, which limits fixed source noise levels. Section 2909 is enforced by the Director of Public Health. Also, Section 2916 of the same ordinance provides for regulation of noise disturbances which are defined as nuisances, generally 5 dbA above the ambient noise level. This section of the Code is enforced by the Police Department. Both sections are generally implemented after initiation by citizen complaints.

The Environmental Protection Element of the Master Plan, adopted by the City Planning Commission Resolution No. 7244, September 19, 1974, establishes guidelines for the compatibility of various land uses relating to surrounding noise levels. Generally, land use deemed to be incompatible with surrounding noise levels are recommended to be discouraged, unless there is appropriate noise insulation. These guidelines establish general criteria for the appropriate level of mitigation that would be applied on a site-specific basis as future projects are submitted for City review.

Title 24 of the California Government Code establishes uniform noise insulation standards for residential projects (including hotels and motels). The Bureau of Building Inspection would review the final building plans to insure that the building wall and floor/ceiling assemblies meet State standards regarding sound transmission.

The primary source of background noise in the project area is due to traffic. Significant increases in traffic are necessary to generate an increase in noise levels which are likely to be discernible to the human ear. To produce a noticeable (3 dBA) increase in environmental noise, a doubling of existing traffic volume would be required/5/. This was illustrated in the analysis for the Downtown Plan EIR. Noise increases for selected streets within the C-3 districts were projected to 1990 and 2000. In no case were these increases greater than 1 dBA./6/ This increase would not be expected to be audible to humans. It is clear that the growth forecast under the conservation-oriented policies of the proposed plan could not generate the substantial increases in traffic necessary to cause a noticeable increase in the ambient noise level of the area.

6) Air Quality/Climate - Could the project:	YES	NO	DISCUSSED
* (a) Violate any ambient air quality standards or contribute substantially to an existing or projected air quality violation?	<u>X</u>	<u> </u>	<u>X</u>
* (b) Expose sensitive receptors to substantial pollutant concentrations?	<u> </u>	<u>X</u>	<u> </u>
(c) Permeate its vicinity with objectionable odors?	<u> </u>	<u>X</u>	<u> </u>
(d) Alter wind, moisture or temperature (including sun shading effects) so as to substantially affect public areas, or change the climate either in the community or region?	<u>X</u>	<u> </u>	<u>X</u>

New construction would take place in the future under the proposed plan or any alternatives. Such construction activities would temporarily affect local air quality, especially the level of total suspended particulates (TSP). The state 24-hour TSP standard could be violated on, and adjacent to, construction sites in the project area. Individual project builders would be required to provide a twice daily watering of construction sites which would reduce dust and particulates. Air quality impacts due to project generated and cumulative traffic will be discussed in the EIR.

7) Utilities/Public Services	YES	NO	DISCUSSED
*(a) Breach published national, state or local standards relating to solid waste or litter control?	—	X	X
(b) Extend a sewer trunk line with capacity to serve new development?	—	X	—
(c) Substantially increase demand for schools, recreation or other public facilities?	—	X	X
(d) Require major expansion of power, water, or communications facilities?	—	X	—

Solid waste service in the project area is provided by Golden Gate Disposal Company under contract to the City and County of San Francisco. Solid waste is currently disposed of at the Altamont Hills landfill site. The City has contracted for the use of this site through November 1, 1988, and the City is considering several sites for long-term solid waste disposal. In addition, the San Francisco County Solid Waste Management Plan calls for the construction of a Resource Recovery Facility which would reduce the need for future landfill capacity, encourage recycling, and produce electricity for sale. In November 1982, Brisbane voters rejected a potential site on the Brisbane/San Francisco border. The City is continuing in its effort to locate an acceptable site. Based on the approximately 1.4 million square feet of additional building space that is forecast to be constructed in the project area under the rezoning by 2000, an additional 1,750 tons of solid waste would be generated annually./7/ Waste collection providers were contacted regarding the proposal and indicated that the project would not adversely affect their ability to provide service to the area./8/

Since large water transmission mains traverse the area, it is expected that there would be no problem in water delivery to SOMA. Local water mains may be undersized for new development in certain locations within the project area. Where new development causes a need for replacement of local mains, otherwise sufficient for general service to the area, the individual project sponsor would be responsible for the cost of upgrading service./9/

The project is not expected to result in a substantial increase in housing. Consequently, the project would not cause substantial increase in school age children or corresponding demands upon the school system.

The San Francisco Clean Water Program has indicated that the main transport sewers south of Market Street are presently inadequate to satisfy City design criteria. The San Francisco Fire Department has stated that the demands of the South of Market Plan will require the relocation of a Battalion Headquarters, an engine company and a truck company to SOMA. Fire, sewer and police service will be discussed in the EIR.

8) <u>Biology</u> - Could the project:	YES	NO	DISCUSSED
*(a) Substantially affect a rare or endangered species of animal or plant or the habitat of the species?	___	<u>X</u>	<u>X</u>
*(b) Substantially diminish habitat for fish, wildlife or plants, or interfere substantially with the movement of any resident or migrator fish or wildlife species?	___	<u>X</u>	<u>X</u>
(c) Require removal of substantial numbers of mature, scenic trees?	___	<u>X</u>	<u>X</u>

The project site is a developed urban area. No endangered plant or animal species are known to inhabit the study area, nor are there any major stands of trees. The proposed controls would require new developments to provide landscaping and street trees.

9) <u>Geology/Topography</u> - Could the project:	YES	NO	DISCUSSED
*(a) Expose people or structures to major geologic hazards (slides, subsidence, erosion and liquefaction).	<u>X</u>	___	<u>X</u>
(b) Change substantially the topography or any unique geologic or physical features of the sites?	___	<u>X</u>	___

The project area is susceptible to earthquake-induced hazards. These issues will be discussed in the EIR.

10) <u>Water</u> - Could the project:	YES	NO	DISCUSSED
*(a) Substantially degrade water quality, or contaminate a public water supply?	___	<u>X</u>	<u>X</u>

- * (b) Substantially degrade or deplete ground water resources, or interfere substantially with ground water recharge? ___ X ___
- * (c) Cause substantial flooding, erosion or siltation? ___ X X ___

Development under the Plan or alternatives would have no effect on storm water run-off or public water supply. The project would not cause flooding, erosion or siltation. However, development proposed in accordance with the plan might expose individuals to tsunami run ups, seiche/10/, or other earthquake induced hazards. This will be discussed in the geologic/seismic impacts section of the EIR.

- | 11) <u>Energy/Natural Resources</u> - Could the project: | YES | NO | DISCUSSED |
|---|----------|-----|-----------|
| * (a) <u>Encourage activities</u> which result in the use of large amounts of fuel, water, or energy or use these in a wasteful manner? | <u>X</u> | ___ | <u>X</u> |
| (b) Have a substantial effect on the potential use, extraction, or depletion of a natural resource? | <u>X</u> | ___ | <u>X</u> |

Additional energy would be used for constuction of new development in the area as well as for daily operation of these buildings and the transportation needs of new employees and residents. Projected increases in energy use resulting from the Plan will be discussed in the EIR.

- | 12) <u>Hazards</u> - Could the project: | YES | NO | DISCUSSED |
|--|-----|----------|-----------|
| * (a) Create a potential public health hazard or involve the use, production or disposal of materials which pose a hazard to people or animal or plant populations in the area affected? | ___ | <u>X</u> | <u>X</u> |
| (b) Interfere with emergency response plans or emergency evacuation plans? | ___ | <u>X</u> | <u>X</u> |
| (c) Create a potentially substantial fire hazard? | ___ | <u>X</u> | <u>X</u> |

The plan would not increase exposure of the public to hazardous materials. The City has adopted an ordinance (Ordinance 253-86, signed by the Mayor on

June 27, 1986) which requires applicants for building permits to analyze soil for hazardous wastes within specified areas and where necessary, to implement the mitigation as listed on page 24. The ordinance specifically includes sites bayward of the high tide line (as shown on maps available from the Department of Public Works (DPW)). Much of the area of landfill in SOMA would fall within these boundaries.

Additionally, individual projects would be subject to separate environmental review. As part of the environmental review process, applicants for permits for sites which may contain toxics would be required to demonstrate that the site is not contaminated or to implement appropriate clean-up. Such sites would include parcels that have been in industrial use for an extended period, such as many of the sites currently zoned M-1 and M-2, or where toxics substances are suspected to have been used on-site. Mitigation would be implemented at the project level through this process.

Portions of the project area are located within the Fire Zone, as designated in the San Francisco Building Code. The Fire Zone includes all of the rezoning area which is east of Sixth Street and north of Brannan Street, and that portion of the area which is east of Hawthorne Street and south of Brannan. Within the Fire Zone, Type H, Hazardous building occupancies (as defined in the Building Code), and bulk storage of flammable materials is forbidden.

The plan would not interfere with the San Francisco Emergency Response Plan which is administered by the Mayor's Office of Emergency Services. Plan recommendations would not create a fire hazard. Additional work or resident population resulting from the plan could be exposed to earthquake-induced fire which will be discussed in the geologic/seismicity section of the EIR.

13) Cultural - Could the project	YES	NO	DISCUSSED
* (a) Disrupt or adversely affect a prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group; or a paleontological site except a part of scientific study?	—	<u>X</u>	<u>X</u>
(b) Conflict with established recreational, educational, religious or scientific uses of the area?	—	<u>X</u>	—

(c) Conflict with preservation of any buildings
of City landmark quality?

____ X X

Prehistoric Resources

The first known settlements in the Bay Area are estimated to have occurred in approximately 2000 B.C. Prior to the Gold Rush, much of the study area was either under water or part of the marshlands extending northward from Mission Bay. Only Rincon Hill, the area extending south from the hill to the original Steamboat Point area near Fourth and Townsend, and a small portion of the northwest corner of the rezoning area were completely above water in 1853. This suggests that the overall level of prehistoric activity throughout the study area was limited. It is not likely that a large number of sites containing archeologically significant prehistoric materials are present. However, prehistoric archeological resources have been discovered in the South of Market Area. An Indian shellmound was found in 1926 near Harrison and Third Streets. During construction of BART a skeleton was found which was radio-carbon dated as approximately 4900 years old.

Historic/Cultural Resources

San Francisco grew slowly in the years preceeding the Gold Rush. Although Mission Dolores and the Presidio were founded in 1776, the only addition to these two settlements by the mid-1830's was the village of Yerba Buena in the vicinity of Portsmouth Square./10/

With the Gold Rush and subsequent expansion of the city (1852-1865), there was a sudden and dramatic increase in activity in sections of the South of Market. The area hosted a variety of commercial and waterfront activities including warehousing and other transportation-related commerce as well as service industries such as saloons, boarding houses and restaurants. Manufacturing activities sprung up just inland of the waterfront. This rapidly expanding commercial growth resulted in the construction of numerous warehouses and industrial buildings which constitute a number of the historic architectural resources discussed below. Shipbuilding began around 1850 at Steamboat Point, at approximately Third and King Streets. Ship repair followed shortly thereafter at Tichenor's Ways at the foot of Second Street

near Townsend. Rincon Point was a center for shipbreaking (for salvage) in the 1850's.

Yerba Buena Cove, which extended into SOMA, south to Folsom Street and west to First Street, was an active port in the early 1850's, although it was enclosed by the Steuart Street wharf by 1854. The Cove was filled in over time after that event. Maritime activity was also prevalent in these early years at Rincon and Steamboat Points. Most of Yerba Buena Cove lies outside the current study area. Steamboat Point was approximately one block south of the study area within the area known as Mission Bay.

Many ships were scuttled or abandoned during this era. Most ships in the early years docked within the natural protection of Yerba Buena Cove, but ships were known also to anchor in the waters between Rincon and Steamboat Points. The original shoreline of Mission Bay extended well into the study area but was too shallow for navigation by large seagoing ships. The San Francisco Maritime Museum has compiled maps which identify 42 historic vessels that may still exist in some form within San Francisco. However, only four of these are south of Market Street and all are north of the current study area. During the work on the C-2 alignment for the San Francisco Sewer project, a whaling ship, the Lydia, was discovered near the foot of King Street near the Embarcadero./12/

The commercial activity of the Gold Rush era has contributed a number of historic resources to SOMA. A detailed historic resources assessment was prepared recently for the I-280 Transfer Concept Program EIR. Additional discussion of historic resources and sites eligible for the the National Register of Historic Places is contained in the Rincon Point/South Beach Final EIR case file EE 80.267, certified November 5, 1980. These documents identified several buildings within SOMA that are either listed on the National Register or considered to be eligible for the National Register. A potential historic district was also identified.

The Department of City Planning has subsequently undertaken a comprehensive review of buildings within the study area to identify buildings of historical or architectural significance. The standards for the review panel are explained in detail in a paper entitled Preservation Panel Review Standards,

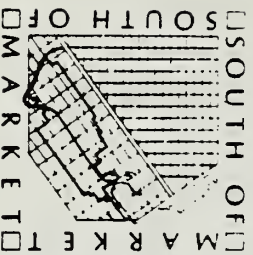
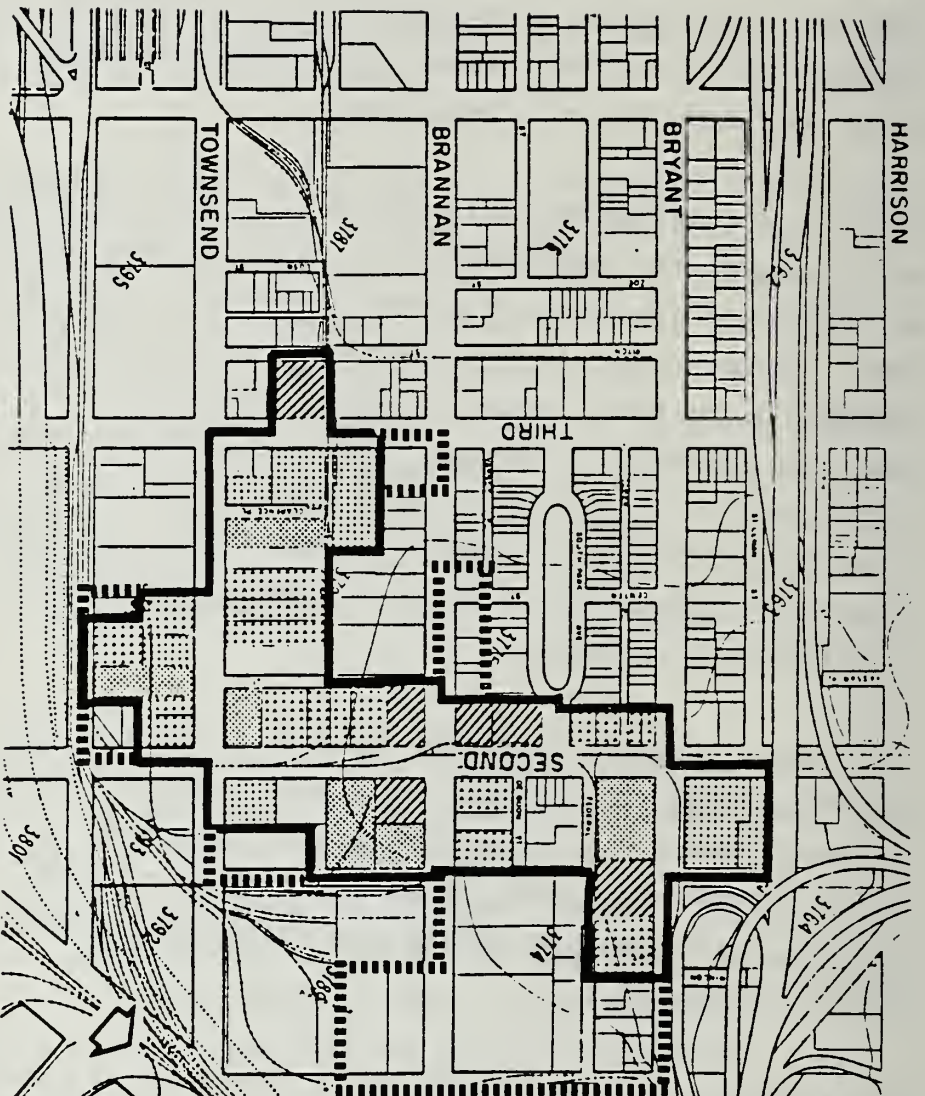
Downtown Plan, Department of City Planning, November 1984. (This document is on file and available for review at the Department of City Planning, 450 McAllister Street.) In brief, there are individual criterion which fall under four major categories of Architecture, History, Environment and Integrity. Each criterion is rated on a scale from Excellent to Fair/Poor with varying point totals assigned on the basis of the importance of the individual criterion. Buildings were given point totals ranging from 0-90. Buildings given 45 or more points were deemed to be of Individual Importance, buildings ranging from 20 to 44 were deemed Contributory, buildings of less than 20 points were labelled of No Importance.

Based on this review the Department has identified a number of significant buildings and also identified an area which is considered eligible for designation as a historic district under Article 10 of the City Planning Code. The boundaries of this district are similar but not identical to those proposed in the I-280 study. Possible extensions to the Historic District have been suggested by Heritage. The attached maps, figures 5 and 6, show the recommended historic district (with suggested extensions) and buildings judged to be of architectural or historical significance by the Department's preservation panel. (Within the recommended historic district, contributory buildings are also shown).

The process of establishing the historic district and/or designation of individual landmark buildings would occur separately from adoption of the proposed SOM controls in accordance with the procedures outlined in Article 10 of the City Planning Code, in brief: initiation by the Landmarks Preservation Advisory Board; approval by the City Planning Commission; and adoption by the Board of Supervisors.

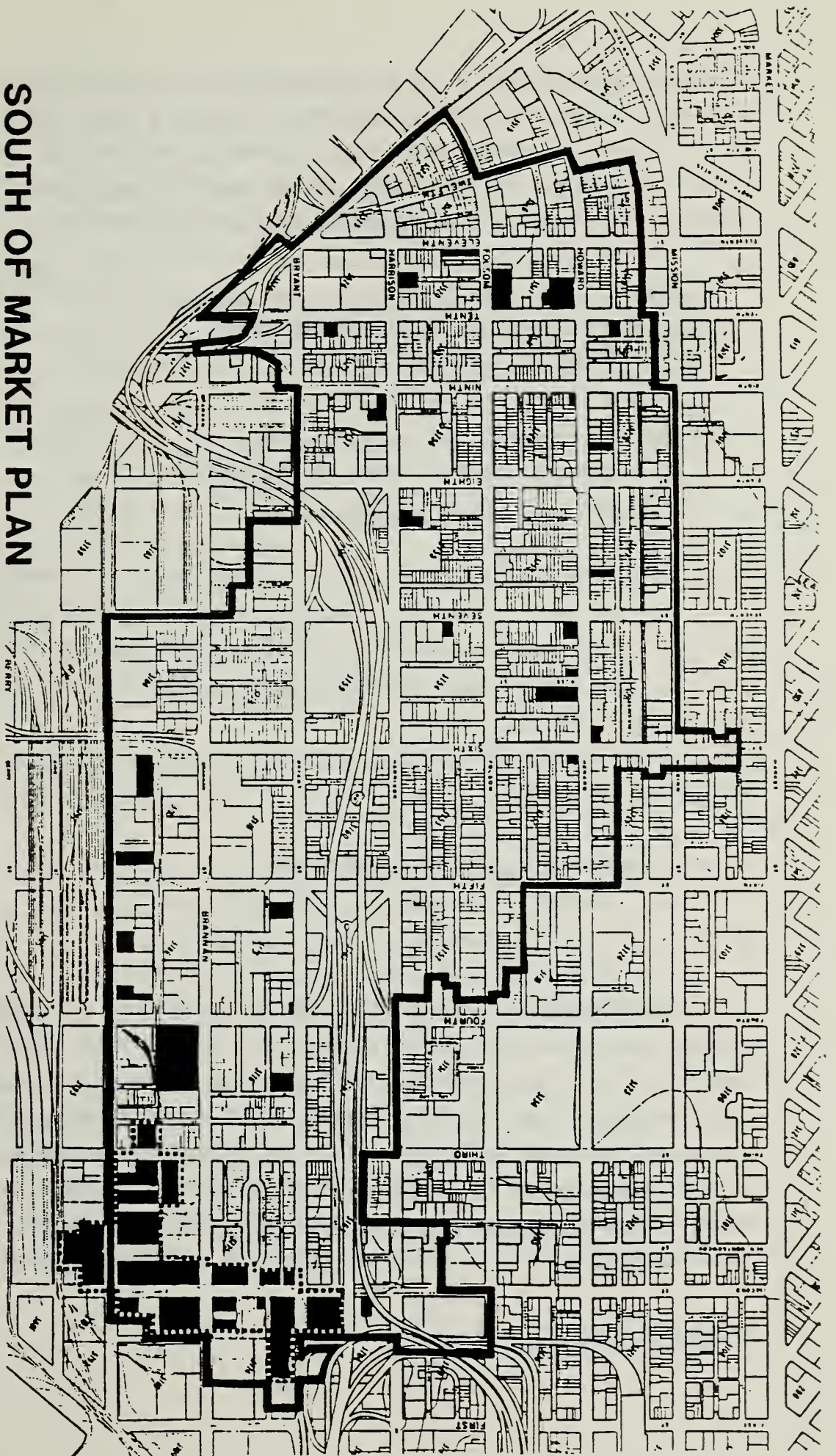
Individual projects within the study area would be subject to further environmental review. In order to prevent any potential adverse effects on prehistoric or historic archeological resources, projects which require excavation below existing foundations would be subject to the mitigation measure listed on page 24.

The proposed project would not inherently cause conflicts with buildings of architectural or historical merit. The evaluation process discussed above



PROPOSED SECOND/TOWNSEND HISTORIC DISTRICT **Schematic Boundary Only**

- Individually Important
(Architecturally and Historically)
- Individually Important
(Architecturally)
- Individually Important
(Historically)
- Contextually Important
- Proposed District Boundary Extension



SOUTH OF MARKET PLAN

**BUILDINGS OF ARCHITECTURAL
AND/OR HISTORICAL MERIT**

..... Proposed Second/
Townsend Historic District

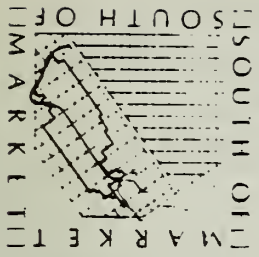


Figure 6

provides the basis for future protection of architecturally significant buildings through the establishment of a historic district and/or designation of individual landmarks. Additionally, impacts upon architecturally or historically significant buildings caused by individual proposals would be assessed and mitigated as appropriate on a case-by-case basis.

C. OTHER	YES	NO	DISCUSSED	
Require approval of permits from City Departments other than Department of City Planning or Bureau of Building Inspection, or from Regional, State or Federal Agencies?	—	X	X	
D. MITIGATION MEASURES	YES	NO	N/A	DISCUSSED
1) If any significant effects have been identified, are there ways to mitigate them?	X	—	—	X
2) Are all mitigation measures identified above included in the project?	X			X

The following are mitigation measures related to topics determined to require no further analysis in the EIR. The EIR will contain a mitigation chapter describing these measures and also including other measures which would be, or could be, adopted to reduce potential adverse effects of the project as identified in the EIR.

MITIGATION MEASURES

Measures proposed as part of the project:

Wind

In the 40-X/85-B height transition zone, buildings may not exceed 40 feet without conditional use authorization. Buildings greater than 40 feet in height would not be approved if such buildings cause adverse wind accelerations in pedestrian walkways, parks and recreation areas. Adverse wind conditions are defined as 11 m.p.h. in pedestrian areas and 7 m.p.h. in public seating areas 10% of the time year round. Exceptions could be granted where it can be demonstrated that such requirements would unduly constrain the development potential of a site or result in unattractive building design.

Urban Design/Open Space

Open space would be required for all commercial and industrial uses, at the following ratios: one square foot of open space per 250 gross square feet of general commercial development, which includes retail, personal service, wholesale trade and home and business service space;(1:250); 1:120 for manufacturing and light industrial space, institutional and like uses; and 1:90 for office space. Alternatively, the controls allow payment of an in-lieu fee at the following rates to provide off-site open space resources: \$0.67 per foot for retail sales, wholesale, personal service or institutional activities, or home or business service activities; \$1.35 per foot for manufacturing and light industrial; and \$1.80 per foot for office use. These payments would be deposited in the South of Market Open Space Fund and provide a funding source for the creation of new public open space in SOMA, which is identified in the Recreation and Open Space Element of the San Francisco Master Plan as a high need neighborhood.

Measures required by City Agencies:

Historic, Architectural and Cultural Resources

Projects which would include excavation below existing foundations would be subject to the following mitigation:

Prior to issuance of a site permit, the project sponsor shall retain an historical archaeologist (or other qualified expert) to perform archival research and site inspection to determine the potential for discovery of cultural or historic artifacts on the project site. Results of this investigation shall be reported to the Environmental Review Officer.

The Environmental Review Officer in consultation with the Secretary to the Landmarks Preservation Advisory Board Board and the archaeologist shall determine whether the archaeologist should instruct all excavation and foundation crews on the project site of the potential for discovery of cultural or historic artifacts, and the procedures to be followed if such artifacts are uncovered.

In the event of high probability of discovery of cultural or historic artifacts, the Environmental Review Officer may require that an archaeologist be present during site excavation and record a daily log of observations. The Environmental Review Officer may also require cooperation of the project sponsor in assisting such further investigations on site as may be appropriate prior to or during project excavation, even if this results in a delay in excavation activities.

Should cultural or historic artifacts be found during project excavation, the archaeologist would assess the significance of the find, and immediately report to the Environmental Review Officer and the Secretary of the Landmarks Preservation Advisory Board. The Environmental Review Officer would then recommend specific mitigation measures, if necessary, and recommendations would be sent to the State Office of Historic Preservation. Excavation or construction which might damage the discovered cultural resources would be suspended for a maximum of four weeks to permit inspection, recommendation and retrieval, if appropriate. This maximum of four weeks shall include any other time periods for which the Environmental Review Officer has required a delay in excavation activities.

Hazards

Projects within the rezoning area, as described on page 18 in the text, could be subject to Board of Supervisor ordinances No. 253-86 which requires that applicants for certain building permits prepare a site history and analyze the site's soil for the presence of hazardous wastes. Where toxics are found in excess of state or federal standards, the sponsor would be required to submit a site mitigation plan (SMP) to the appropriate state or federal agency(ies), and to implement an approved SMP prior to issuance of any building permit. Where toxics are found for which no standards are established, the sponsor would request a determination from state and federal agencies as to whether an SMP is needed. Prior to the issuance of any building permit, DPW would have to receive confirmation (through the Director of Public Health) that either no SMP was required, or that an approved SMP had been implemented.

As a requirement for new construction in the project area, an evacuation and emergency response plan would be developed by the project sponsor or building management staff, in consultation with the Mayor's Office of Emergency Services, to ensure coordination between the City's emergency planning activities and the project's plan and to provide for building occupants in the event of an emergency. Specific site emergency response plans would be reviewed by the Office of Emergency Services and implemented by building management, insofar as feasible, before issuance of final building permits by the Department of Public Works.

NOTES - INITIAL STUDY

- /1/ Recht Hausrath & Associates, Economic Analysis for the South of Market Rezoning Study, Working Papers I & II, February 28, 1985 and February 4, 1985, and Memorandum from Recht Hausrath & Associates to the Department of City Planning, May 23, 1986, July 2, 1986, and September 24, 1986.
- /2/ San Francisco Department of City Planning, May 24, 1973, Open Space, an Element of the Master Plan.
- /3/ Noise intensity is measured in decibels (dB). Because the human ear is more sensitive to some frequencies than others, environmental noise is customarily measured in "A-weighted" decibels, or dBA. The "A-weighted" scale simulates the frequency of the human ear. Ldn is a time-weighted average to account for a relatively greater perceived disturbance of evening to daytime noise.
- /4/ D.N. May, Ph.D., 1978, Handbook of Noise Assessment, Van Nostrand Reinhold Environmental Engineering Services, p.211.
- /5/ FHWA Highway Traffic Noise Prediction Model, Report #FHWA-RD-77-108, December 1978, p.8.
- /6/ Downtown Plan Final EIR pp.IV J.8-18.
- /7/ Based on a waste generation factor of 2.5 pounds per square foot annually taken from the Downtown Plan EIR for the sub-area immediately adjacent to SOMA.
- /8/ Phone conversation with M. Garbarino, Golden Gate Disposal Co., October 31, 1986.
- /9/ Letter from Martin Lieberman, San Francisco Water Department, November 21, 1986, phone conversation with Thomas Dickerman, San Francisco Water Department, July 15, 1987,
- /10/ Seiches are earthquake or landslide-induced movements of confined bodies of water, such as a Bay, similar to slashing of water in a bathtub.

/11/Olmsted, R.R. and N.L., Pastron, A., 1977, San Francisco Waterfront, Report on Historic Cultural Resources.

/12/San Francisco Clean Water Program, 1981, Behind the Seawall, Historical Archeology Along the San Francisco Waterfront, pp.107-250.

E. MANDATORY FINDINGS OF SIGNIFICANCE

- | | <u>YES</u> | <u>NO</u> | <u>DISCUSSED</u> |
|---|------------|-----------|------------------|
| *1) Does the project have the potential to degrade the quality of the environment, substantially reduce habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or pre-history? | ___ | <u>X</u> | ___ |
| *2) Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? | ___ | <u>X</u> | ___ |
| *3) Does the project have possible environmental effects which are individually limited, but cumulatively considerable? (Analyze in the light of past projects, other current projects, and probable future projects.) | <u>X</u> | ___ | <u>X</u> |
| *4) Would the project cause substantial adverse effects on human beings, either directly or indirectly? | ___ | <u>X</u> | <u>X</u> |

The project could have significant effects either individually or in conjunction with cumulative impacts of other projects in the areas of land use, transportation, air quality, energy use, and geologic hazards.

E. ON THE BASIS OF THIS INITIAL STUDY

- ___ I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared by the Department of City Planning.
- ___ I find that although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because the mitigation measures, numbers ____, in the discussion have been included as part of the proposed project. A NEGATIVE DECLARATION will be prepared.
- X I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

for *Sally Maxwell*
BARBARA W. SAHM
Environmental Review Officer
for

DEAN L. MACRIS
Director of Planning

DATE: July 25, 1987

BWS:JMC:eh
JMC19/07-1

APPENDIX B. LAND USE AND EMPLOYMENT ANALYSIS

INTRODUCTION

This appendix presents background information related to the cumulative land use, business activity and employment analyses and forecasts used in the EIR. The EIR analyzes the SOM Plan in a future context that incorporates other growth and change over time. The cumulative perspective takes in other City and regional growth, but focuses on the area described in the Introduction to the Setting and Impacts Chapter as the "Survey Area", which includes the C-3 district and the South of Market/Folsom area (SOM/F), of which the SOM Plan area is a part.

The methodology for the economic analyses and forecasts done for the SOM Plan EIR is consistent with and builds upon economic analyses and forecasts prepared for the Downtown Plan EIR (EE81.3 certified October 18, 1984). In that regard, the work for the SOM Plan EIR updates, expands the scope, and otherwise improves the analysis of the Downtown Plan EIR. As in the case of the Downtown Plan EIR, extensive economic analysis and forecasting work was undertaken specifically for the SOM Plan to address the specific questions posed by the SOM Plan's proposed land use controls and to provide the necessary long-term future context for the cumulative impact assessment. Special inventories and analyses provided information for the survey area for the setting year, since employment and land use data are not regularly published for subareas of the City.

This appendix describes methodology and data sources for establishing 1985 setting conditions for land use, business activity and employment for the cumulative analyses, as well as methodology and data sources for the economic forecasts for the year 2000.

Appendices

B. Land Use and Employment Analysis

ESTIMATING SPACE AND EMPLOYMENT FOR 1985

Methodology

There is no annual source for land use or employment data for subareas of the City such as the area analyzed in this EIR. Consequently, analysis of citywide employment data (that are available), survey data, land use inventories, and information on recent land use changes resulting from new development provided the basis for the 1985 description of space by use and employment by business activity.

In 1981 and 1982, the Department of City Planning conducted land use inventories in the C-3 District and South of Market/Folsom area./1/ Rather than re-do the complete inventories to establish space use conditions in 1985, the original inventories were updated using Department of City Planning information on development projects (office, retail and hotel) completed and available for occupancy at the end of 1985 that were not accounted for in the 1981/1982 data. The updates of space by use incorporated additions due to new construction and conversions as well as space lost as a result of demolition or conversion.

Employment estimates for 1981 for the C-3 District and 1982 for the SOM/F were based on a procedure whereby employment density factors were applied to land use inventory estimates of space by use. The employment density factors were the results of employer/employee surveys conducted in the C-3 District in 1981 and the SOM/F area in 1982. The survey data were used to develop employment density factors for different business activities and for Standard Industrial Classification categories./2/ The results of this analysis were estimates of employment by business activity and SIC. The calculated employment estimates were evaluated against citywide totals published by the State Employment Development Department (EDD) to assess the reasonableness of the estimates. Some adjustments to the calculated estimates were required to bring them more in line with total employment data./3/

Appendices

B. Land Use and Employment Analysis

The 1981/1982 employment estimates for the C-3 District and SOM/F then had to be updated to 1985 for the SOM Plan EIR. The 1985 C-3 district and SOM/F estimate were based on citywide employment data for 1985 provided by the EDD, as well as on detailed analysis to determine the changes that occurred in downtown San Francisco over the 1981-1985 period.

The procedure for updating 1981 estimates to 1985 involved consideration of a variety of factors: changes in employment in each sector, changes in space use, and changes in vacancy. EDD's citywide employment data by SIC for 1981 and 1985 provided a starting point for analyzing employment changes. Conversations with EDD staff provided more background on changes evident in the data. Analysis centered on the extent to which changes in each sector occurred in the C-3 District or SOM/F area or in the rest of the City. It also accounted for the fact that net change for the City shown in EDD data could represent larger declines in some areas offset by growth in other areas. Review of documented "move-outs"/4/ and corporate decisions and performance affecting the level of employment in downtown businesses during the 1981-1985 time period was an important part of the procedure. In addition, information on changes in the use of space through new construction, conversion and demolition was incorporated along with vacancy rate data and information on the net absorption of space.

The resultant estimates of SOM/F and C-3 district employment for 1985 were evaluated in several ways. The distribution of total employment between the SOM/F and C-3 areas was reviewed for reasonableness. The distribution of employment by business activity among subareas of the survey area was another check on the estimates. Did the distribution reflect what was known about patterns of economic activity from land use inventories and other observations? Estimates of employment by SIC were compared to citywide employment data by SIC to assess the reasonableness of the percentage of the total assigned to the survey area.

Appendices

B. Land Use and Employment Analysis

Sources for 1985 SOM/F and C-3 District Survey Area Estimates

The 1985 estimates of space and employment were derived from a variety of sources including citywide data, land use inventories, business surveys, and other relevant information describing recent downtown economic conditions. At the time the analysis was done, the most recent data available were for the year 1985. Some sources are for earlier years. Most sources providing quantitative data do not measure conditions specifically for the survey area (e.g., most employment information is published as citywide data). Therefore, a variety of indirect sources were reviewed and compared to document the most recent conditions and trends. The following list specifies the major sources of data and information for estimating space use and employment by business activity.

Space

- C-3 District Land Use Inventory, 1981, as updated to 1984
- South of Market Land Use Inventory, 1982
- San Francisco Department of City Planning, Major Projects Completed in 1985, December 31, 1985; Major Projects Completed in 1986, November 4, 1986; Major Projects Under Construction, November 4, 1986
- Coldwell Banker, Office Vacancy Index of the United States, September 30, 1982 and quarterly reports from March 1985 through December 1986
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- Fuller Commercial Brokerage, "San Francisco Office Leasing Market Report," November 1, 1985
- Gallelli Real Estate, "Office Space Survey for the Downtown Financial District, San Francisco, California," June 1985
- Grubb and Ellis, "Office Vacancy Study, San Francisco Financial District," October 1, 1985

Appendices

B. Land Use and Employment Analysis

- Knowlton Realty, "Downtown San Francisco Office Space: An Analysis and Survey," January 1, 1986

Employment

- State of California Employment Development Department, Annual Planning Information: San Francisco City and County, 1986-1987, May 1986, (includes citywide wage and salary employment for December 1985 and forecasts for 1986 and 1987)
- Downtown Plan EIR, 1984
- South of Market Rezoning Study, 1985
- C-3 District Employer/Employee Surveys, 1981/82
- South of Market/Folsom Employer/Employee Surveys, 1982
- U.S. Department of Commerce, Bureau of the Census, County Business Patterns: California, 1982 and 1983
- U.S. Department of Commerce, Bureau of the Census, Census of Service Industries: California, 1977 and 1982
- U.S. Department of Commerce, Bureau of the Census, Census of Retail Trade, Major Retail Centers: California, 1977 and 1982
- Association of Bay Area Governments, Projections, '85, by census tract for San Francisco
- Pacific Properties Group, "Corporate Relations from San Francisco in the 1980's," June 1985
- Information on company relocations/job losses for San Francisco supplied by Economic Development Department, San Francisco Chamber of Commerce
- Articles and reports related to the local and regional real estate market, business location decisions, tourism, general economic trends and conditions and the health of individual industries important to San Francisco

ECONOMIC FORECASTING APPROACH AND METHODOLOGY

Overview

The cumulative context for future employment and space use for the SOM Plan EIR was developed according to an economic forecasting approach. The forecasts provide a complete and consistent future context of both employment and building development. The approach follows a demand-based perspective; i.e., economic growth results in expansion of employment; additional employment results in demand for additional space; that demand absorbs available space and stimulates additions to the supply of space through new construction or conversion/renovation of existing buildings. In addition, employment declines in some sectors, leaving space vacant for absorption, conversion or demolition. Some of the decline is attributable to increased demand for space from other sectors; the rest of the decline occurs for other reasons.

The forecast approach uses analysis of current economic conditions and past trends, and assessments of the outlook for economic growth and the supply of space in the future. The forecasts are long term, setting employment and space use parameters for the cumulative context for future growth and change. They reflect reasonably foreseeable future conditions from the vantage point of the mid-1980s. Natural disasters, other catastrophes or economic shocks cannot be accounted for.

The forecasts for 2000 represent about 15 years of growth from 1985. The year 2000 per se is an approximate benchmark appropriate for use in long-term forecasting. For example, should the recessionary phase of a business cycle be in evidence in 2000, then the 2000 forecasts could actually occur a few years later. Similarly, if an expansionary phase were in full swing, the forecast level of economic activity could occur a few year earlier.

Such variation in the timing of growth would not affect conclusions of the cumulative analysis. Business cycles that affect the timing of downtown and

Appendices

B. Land Use and Employment Analysis

citywide growth also are likely to affect growth in the SOM Plan area. Thus, the timing of SOM Plan area and cumulative growth would remain consistent. Further, only an approximate time frame is relevant for evaluating impacts of future citywide and regional growth with regard to service capacities transportation and other infrastructure, and housing supply. It is not necessary to identify the precise year when impacts of cumulative growth would first be in evidence. Growth and the infrastructure to accommodate it are never "in sync" on an annual basis. Consequently, it is reasonable to conduct cumulative analysis for future benchmark years, recognizing that some variation in timing is possible.

Survey Area and Total City Forecasts, 2000

Explanation of Methodology and Assumptions

The economic forecasting methodology for the year 2000 cumulative forecasts combined both demand and supply perspectives. Analysis of the following demand and supply factors provided the basis for many of the forecast conclusions:

- past trends in employment by SIC for the City and the region (not available by business activity);
- other employment forecasts by SIC for the City, the region and the nation;
- business and industry organization trends and market forces;
- recent history and future outlook for sectors of the economy particularly important in downtown San Francisco (e.g., banking, trade, tourism, utilities, government, corporate headquarters, corporate and other business services, and entrepreneurial activity);

Appendices

B. Land Use and Employment Analysis

- location preferences of various business functions, including consideration of types of space, rents, labor availability, and transportation access;
- location and amounts of development potential in the survey area and (to a lesser extent) in the rest of the City, including consideration of existing vacant space, space in projects approved and under construction, development proposals, and rezoning efforts;
- location options elsewhere in the region; and
- interdependence of economic activities (e.g., office and retail, tourism and retail, corporate office and business supply and services, retail/restaurant and distribution).

Analysis of those factors was worked into a forecasting procedure that considered the survey area, its subareas (the C-3 district and SOM/F which includes SOM Plan area), and the total City as a unit, but also separately, with potentials in each area influencing the overall forecast as well as the locational allocation.

The forecasting procedure began with analysis at a citywide level, considering the outlook for total employment and overall economic activity as well as the outlook for various economic sectors. At that level, historic rates of growth and recent trends were analyzed. Particular attention was given to establishing the background and reasons for recent trends to determine how future patterns might be similar or different. Factors of importance for future economic growth in the City were identified, focusing on San Francisco's ability to compete with the rest of the Bay Area region as well as other locations. Other forecasts and descriptions of the future economic outlook for various business sectors were reviewed, including those for the City, the region, the state, and the nation. All of those analyses were

Appendices

B. Land Use and Employment Analysis

synthesized in consideration of the mix of business activities in the survey area and in the rest of the City and identification of those activities likely to grow, those likely to remain relatively stable, and those likely to decline over time. The results of the first level of the forecasting procedure were preliminary forecasts of employment by business activity/SIC for San Francisco.

The second level of the forecasting procedure involved allocation of those preliminary forecasts to the survey area and the rest of the City. Explicit consideration was given to the survey area and its subareas including the rezoning area, the rest of the SOM/F and the C-3 district. The analysis at that level focused on the availability of various types of space in various locations. The allocation involved shifts between subareas for some activities, declines in occupied space for some activities, and absorption of existing vacant as well as newly constructed space. The results of the second level of the forecasting procedure were preliminary forecasts of employment by business activity/SIC for the survey area, its subareas, and the rest of the City, and forecasts of space use for the survey area.

Assumptions about projects approved but not yet built as well as about land use policy, zoning and other City requirements affecting future commercial development are important parts of the economic forecasting analysis. For the SOM Plan EIR, the policies, zoning and requirements in place or being implemented at the time the analysis was done (late 1985 through mid-1986) were those assumed to remain in place in the future. Such assumptions provide the basic framework for establishing development potential and parameters for amounts and types of space in various locations.

Two alternatives were explicitly considered in the forecasting analysis - the SOM Plan/rezoning and the existing zoning scenario. The potential impacts of alternatives 2 and 3 of the EIR, the NO Office and More Housing alternatives, were then qualitatively compared to those scenarios.

The process of allocating the citywide forecasts of employment by business

Appendices

B. Land Use and Employment Analysis

activity to the survey area suggested some revisions to the preliminary forecasts.

In the final step of the forecasting procedure, all aspects were evaluated together: the overall business activity/SIC scenarios, the share of employment growth and total employment allocated to the survey area and the rest of the City, the business activity scenarios for the survey area, and the survey area development patterns illustrated by the scenarios for changes in occupied and vacant space. The resultant final forecasts were reviewed in this way for consistency and reasonableness.

Comparison to Forecasts in the Downtown Plan EIR/5/

Employment forecasts for the C-3 District prepared for the SOM Plan EIR are different from the C-3 District employment forecasts prepared for the Downtown Plan EIR (see Table B-1). Although the geographic boundaries are the same /6/ the employment forecast through 2000 is lower in the SOM Plan EIR than the Downtown Plan EIR forecast, reflecting updated economic analysis of recent trends in employment and growth potential for downtown business sectors.

The difference between the two forecasts in C-3 District employment in 2000 is about 45,000 [the difference between 375,420 (Downtown Plan EIR) and 331,160 (SOM Plan EIR)]. That difference represents about 12% fewer jobs in the C-3 District through 2000 according to the revised forecasts.

Comparing the forecasts in terms of employment growth is complicated by differences in C-3 District employment estimates for the base years (1981 and 1984/1985). As described above, the economic analysis of the SOM Plan EIR included preparing employment estimates for a 1985 setting. The EIR estimate of C-3 District employment in 1985 reflects that recent analysis; the Downtown Plan EIR estimate of employment in 1984 does not.

Appendices

B. Land Use and Employment Analysis

The Downtown Plan EIR estimates were prepared when the most recent citywide employment data available (from EDD) were for 1981. A land use inventory, an extensive employer/employee survey, interviews, and other data analyses were conducted in 1981 and 1982 to establish an estimate of C-3 District employment and space use in 1981. Most Downtown Plan EIR setting text and tables describing C-3 district land use, space use and employment are for 1981./7/

TABLE B-1: COMPARISON OF C-3 DISTRICT EMPLOYMENT ESTIMATES FROM THE DOWNTOWN PLAN EIR AND THE SOM PLAN EIR

Downtown Plan EIR			SOM Plan EIR		
1981	270,370	(derived from published data)	1981	267,590	(derived from published data revised since Downtown Plan EIR per adjustments made by EDD)
1984	286,130	(estimated from simple extrapolation of 1981-2000 forecast)	1985	261,980	(derived from published data)
2000	376,420	(forecast)	2000	331,160	
Change	1981-2000	+106,050	Change	1981-2000	+63,570
Change	1981-1984	+ 15,760	Change	1981-1985	- 5,610
Change	1984-2000	+ 90,290	Change	1985-2000	+69,180

NOTE: The estimates in the table include both permanent employment and annual average construction employment.

SOURCE: Recht Hausrath and Associates

Appendices

B. Land Use and Employment Analysis

The year 1984 was designated the official "setting" for the Downtown Plan EIR analysis, because new Downtown Plan policies would go into effect in that year. Therefore, 1984 estimates for C-3 District space and employment were required. For 1984 estimates of space, the 1981 land use inventory was updated to account for new construction, demolition and conversion due to projects under construction in mid-1982. The 1984 employment estimates presented in the Downtown Plan EIR are simple extrapolations of forecasted C-3 District growth from 1981 through 2000. The EIR acknowledged that the employment estimate was likely to be high, given uncertainty about the effects of the recession in the early 1980s and the difficulty of making short-term predictions from a study with a longer-term perspective./8/

Analyses for the SOM Plan EIR includes citywide employment data from EDD for 1984 and 1985. This data, as well as other evidence of recent changes in the level of employment downtown, indicate that the short-term C-3 District employment growth from 1981 to 1984 projected for the Downtown Plan EIR did not occur. In fact, employment declined from 1981 to 1985.

The 1981 estimate of C-3 District employment by business activity is essentially unchanged as a result of recent analyses of downtown employment. Review of updated EDD employment data for the City for 1981 led to a slight downward adjustment in employment in the hotel sector. That is reflected in the revised 1981 estimate presented in Table B-1.

Thus, the 1985 C-3 District estimates utilized in the SOM Plan EIR follow from the 1981 estimates in the Downtown Plan EIR as updated by the data sources discussed above. Because the SOM Plan estimates for 1985 include the use of more current data, and are not a simple extrapolation from 1981 estimates, the SOM Plan EIR represent a more realistic assessment of conditions in the C-3 District in the mid-1980s than do the 1984 projections in the Downtown Plan EIR.

Appendices

B. Land Use and Employment Analysis

The preceding discussion highlights the difficulty in comparing the employment growth represented by the forecasts, since the growth anticipated for the early 1980s in the Downtown Plan EIR did not occur [see the line item on the table for "Change 1981-1984" (which was a projection) and "Change 1981-1985" (which is based on published data for that period)]. Thus the rate of employment growth from 1984-2000 in the Downtown Plan EIR is lower than it would be if current estimates of 1984 (or 1985) employment were used. Consequently, comparing the Downtown Plan EIR change from 1984 through 2000 (+90,000) to the SOM Plan EIR change from 1985 through 2000 (+69,000) is inappropriate and understates the real difference between the forecasts. [The one year discrepancy (between 1984 and 1985) for that comparison is not important, since employment did not change much from 1984 to 1985]. Comparing the two forecasts of change in employment from 1981 through 2000 is more appropriate, since the base year estimates for both forecasts are essentially the same and derived from published data. For that time period, the Downtown Plan EIR forecast shows growth of about 106,000 jobs in the C-3 District while the updated forecasts for the SOM Plan EIR show growth of about 64,000 jobs. The difference--42,000 jobs--(or 45,000 if the adjusted 1981 estimate is used as the starting point for both forecasts) is about 40% less employment growth for the C-3 District in the SOM Plan EIR compared to the Downtown Plan EIR.

That difference between the two C-3 District forecasts is due to revised estimates for office employment. Much of the actual employment decline from 1981 through 1985 was attributable to conditions in the office sector: decentralization of some activities to the suburbs, mergers and acquisitions, deregulation, and other factors affecting the health and performance of specific industries and firms. While some of those factors were anticipated in the Downtown Plan EIR forecasts, others were not. Analyses for the SOM Plan EIR indicated it was unlikely that the Downtown Plan EIR forecast would be achieved by the year 2000 given the extent of employment decline in certain office sectors, the range of factors affecting employment in the early 1980s and the duration of the effects. To achieve the Downtown Plan EIR forecast would require more employment growth from 1986 through 2000 than was

Appendices

B. Land Use and Employment Analysis

originally forecast for the entire period from 1981 through 2000. Moreover, the resultant rate of employment growth from 1986 through 2000 (2.45% per year, compounded) would be higher than the rate that prevailed during the strong growth years of the 1970s (2.42% per year, compounded, from 1972-1981). Analysis for this EIR including review of other forecasts indicated that such a future trend was highly unlikely. Consequently, the C-3 District forecast was revised to reflect recent economic conditions and an updated outlook on the future.

The updated forecasts also reflect changes to land use policies and zoning since the Downtown Plan EIR forecasts were prepared. In general, more recent policies limit the potential for office development in some areas compared to what was assumed originally. The Downtown Plan as approved incorporated lower floor-area ratios, lower height limits and restrictions on the ability to shift transferable development rights between subareas of the C-3 District compared to provisions of the Plan as proposed and assumed for forecasting purposes for the Downtown Plan EIR. Subsequent plans and rezoning for mid-Market Street, North of Market, Chinatown and parts of South of Market also reduced the amount of office development allowed in areas included within the boundaries of the C-3 District used for the Downtown Plan EIR forecasts. In addition, a development fee for child care was adopted and Proposition M was approved. The updated C-3 District forecast in this EIR accounts for those policy changes affecting development potential.

NOTES - Land Use and Employment Analysis

/1/ See San Francisco Department of City Planning, Downtown Plan Environmental Impact Report (EIR), EE81.3, certified October 18, 1984, Vol. 1, pp. IV.B.1 - IV.B.13, for 1981 land use information for the C-3 District. See San Francisco Department of City Planning, South of Market Rezoning Study: Housing, Business Activity, Neighborhood Livability Research Findings, March 1985, pp. 67-78, for 1982 South of Market land use information.

Appendices

B. Land Use and Employment Analysis

- /2/ The Standard Industrial Classification system was developed by the U.S. Office of Management and Budget to provide standard categories for reporting and documenting business and industry activity. The SIC system is used by local, state and federal agencies in reporting economic statistics. See Executive Office of the President, Office of Management and Budget, Standard Industrial Classification Manual, 1987.
- /3/ See Downtown Plan EIR, pp. IV.C.1 - IV.C.25, for 1981 C-3 District employment estimates and other results of the C-3 District employer/employee surveys. See South of Market Rezoning Study, pp. 53-97 for 1982 South of Market employment estimates and other results of the South of Market employer/employee surveys.
- /4/ The term "move-outs" refers to large-scale relocations of office employment from San Francisco, generally to suburban facilities. Most of the recent move-outs consisted of the back-office operations for larger companies (e.g., administrative and technical support operations, data processing, credit card operations). In cases of some smaller companies, the entire office is relocated.
- /5/ The SOM Plan EIR does not specifically present or discuss the employment estimates for the C-3 District for 1985 or 2000 in the text since it is the SOM Plan area which is the appropriate focus of the analysis for this EIR. However, the C-3 estimates are specifically considered in the cumulative transportation analysis presented in the EIR. The comparison and explanation of the differences between the estimates for the C-3 District used in the Downtown Plan EIR and in the SOM Plan EIR is necessary to explain, in part, the differences in the results of the transportation analysis for the two EIRs.
- /6/ The C-3 district as assessed in the estimates and forecasts presented in Table B-1 is identical to the C-3 district analyzed within the Downtown Plan EIR, in order to provide direct comparison between the Downtown Plan EIR forecasts and the revised forecasts for that area utilized in the SOM EIR analysis. As explained in the Introduction to the Setting and Impacts Chapter of this EIR, a portion of the C-3 district has been shifted to the SOM rezoning area. Therefore, the boundaries of the C-3 district as considered in the SOM Plan EIR and presented in the background documents for the EIR, reflect the revised boundary. It is not directly comparable to the C-3 district represented in Table B-1.
- /7/ See Downtown Plan EIR, pp. IV.B.1-IV.B.13 and IV.C.1-IV.C.25 in particular.
- /8/ Downtown Plan EIR, pp. IV.B.15-IV.B.16, p. IV.C.26, note /22/ on p. IV.C.58, and Appendix H. p. H.7.

SOUTH OF MARKET TRANSPORTATION

INTRODUCTION

This appendix summarizes the sources of data and methodology used for the South of Market (SOM) EIR transportation analysis, and the adaptations to the calibration procedure made within the transportation model to reflect new information gathered since publication of the Downtown Plan EIR (EE 81.3, certified October, 1984).

Analysis of the transportation impacts for the South of Market (SOM) area required a two tier approach: travel demand analysis assessing the transit and traffic effects at the regional screenlines or major gateways to the city; and a localized assessment of the traffic and circulation effects within the city, including analysis of intersections, parking, service vehicles, and pedestrians within the survey area. Analysis was conducted for the existing conditions or base case, 1984/85, and for a future year, 2000, for the PM peak period (4-6 PM) and the PM peak hour (4:30-5:30 PM). The PM peak period is considered the most critical for assessment of impacts on the city's street network (traffic back-ups in the afternoon queue on city streets rather than on the freeway system) and also tends to carry slightly more trips on the regional system than during the AM peak period.

The screenline analysis provides a context for studying the cumulative transportation impacts generated by future growth. Travel demand is projected at a detailed level within the South of Market/Folsom (SOM/F) and Downtown San Francisco (C-3 District) survey area and at a more general level for the rest of San Francisco and the region. This analysis relies on use of a computerized transportation model, which is an adaptation of the model used for forecasting travel demand for the Downtown Plan EIR (EE 81.3, certified October, 1984.) The localized impact assessment uses inputs to, and output generated from, the transportation model to forecast growth in auto travel, parking demand, pedestrian travel, etc. within the survey area.

DESCRIPTION OF MODEL

The South of Market transportation "model" is a mathematical computer program that produces estimates of travel demand at a very specific level for an identified study area based on land use. It is most suited to transportation impact analysis for definitive study areas within the city or for project level analysis when detailed information regarding employment or land use development and travel behavior is available.

Travel demand generated outside of the study area, in other parts of the city or region (background travel), is estimated from regional analysis performed by the Metropolitan Transportation Commission. This model affords an advantage to a local jurisdiction in allowing independent estimation of background travel outside of a defined study area without the need for replicating regional travel behavior and travel growth trends within the model.

The South of Market model relies on a manual calibration procedure conducted independent of the computer program, rather than on a set of pre-programmed instructions or a standard procedure within the model. While this procedure relies more heavily on the use of professional judgement, it also affords greater flexibility for the transportation professional to make minor adjustments to the model results to improve the predictive ability. The SOM model consists of a sophisticated mathematical computation program which permits the planner to quickly calculate changes in travel demand based on manual adjustments to model assumptions regarding employment or travel behavior.

The transportation model is organized to permit input of detailed base data for a study in two distinct categories: the primary study area which includes the project area and for which information can be subdivided into four subareas; and the secondary study area which is outside the project area, but for which detailed data is available. For the South of Market modelling process, the primary study area is defined as the South of Market/Folsom

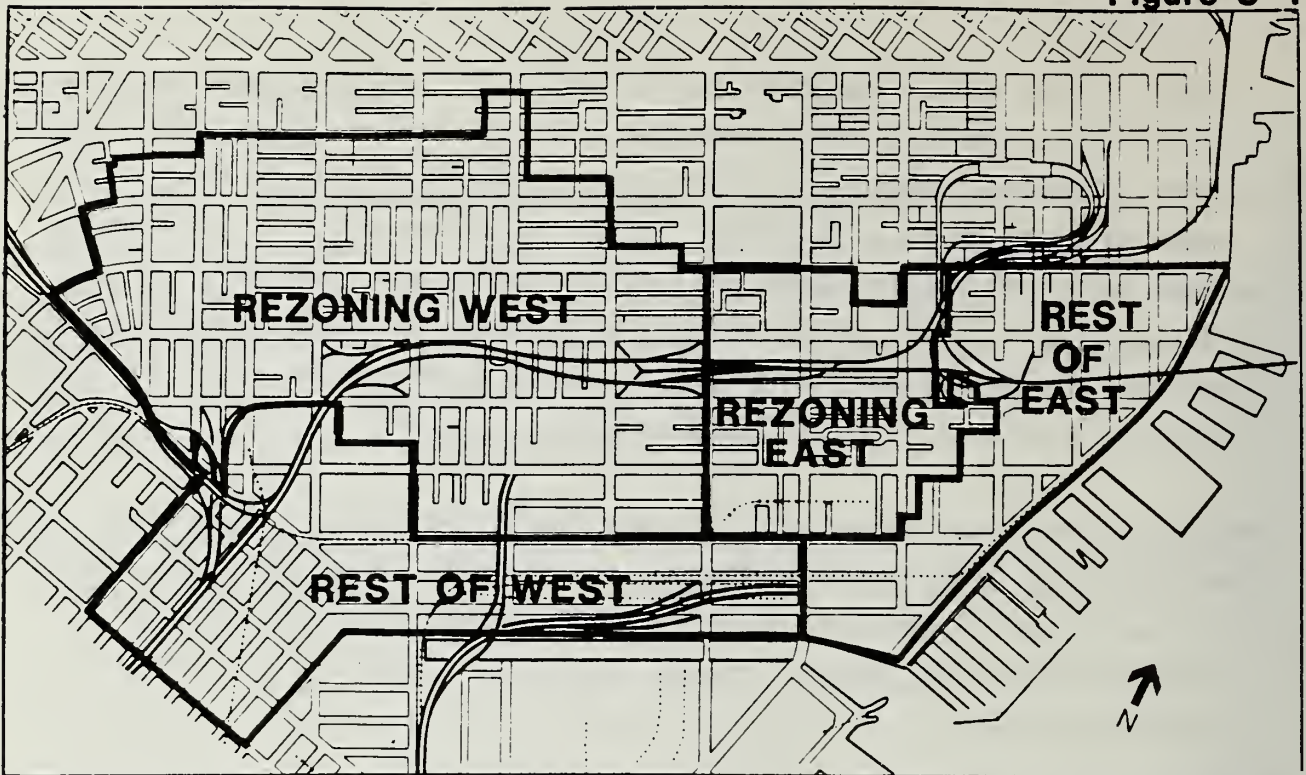
(SOM/F) survey area. The SOM/F survey area is broken down into the following four subareas: Rezoning Area West of 4th Street, Rezoning Area East of 4th Street, Showplace Square, and Rest of East (Rincon Hill/South Beach). The secondary study area is equivalent to the C-3 zoning district or Downtown survey area. As new areas are analyzed in the future, such as the Inner Mission, the secondary study area can be expanded in scope to incorporate and consolidate primary study areas such as South of Market and the C-3 District that have previously been analyzed in greater detail.

Although not presented separately, this cumulative analysis takes into account the effects of development of the Mission Bay site, adjacent to the south of the Project Area. Detailed explanation of the environmental effects associated with that project are the subject of a separate EIR, to be published shortly.

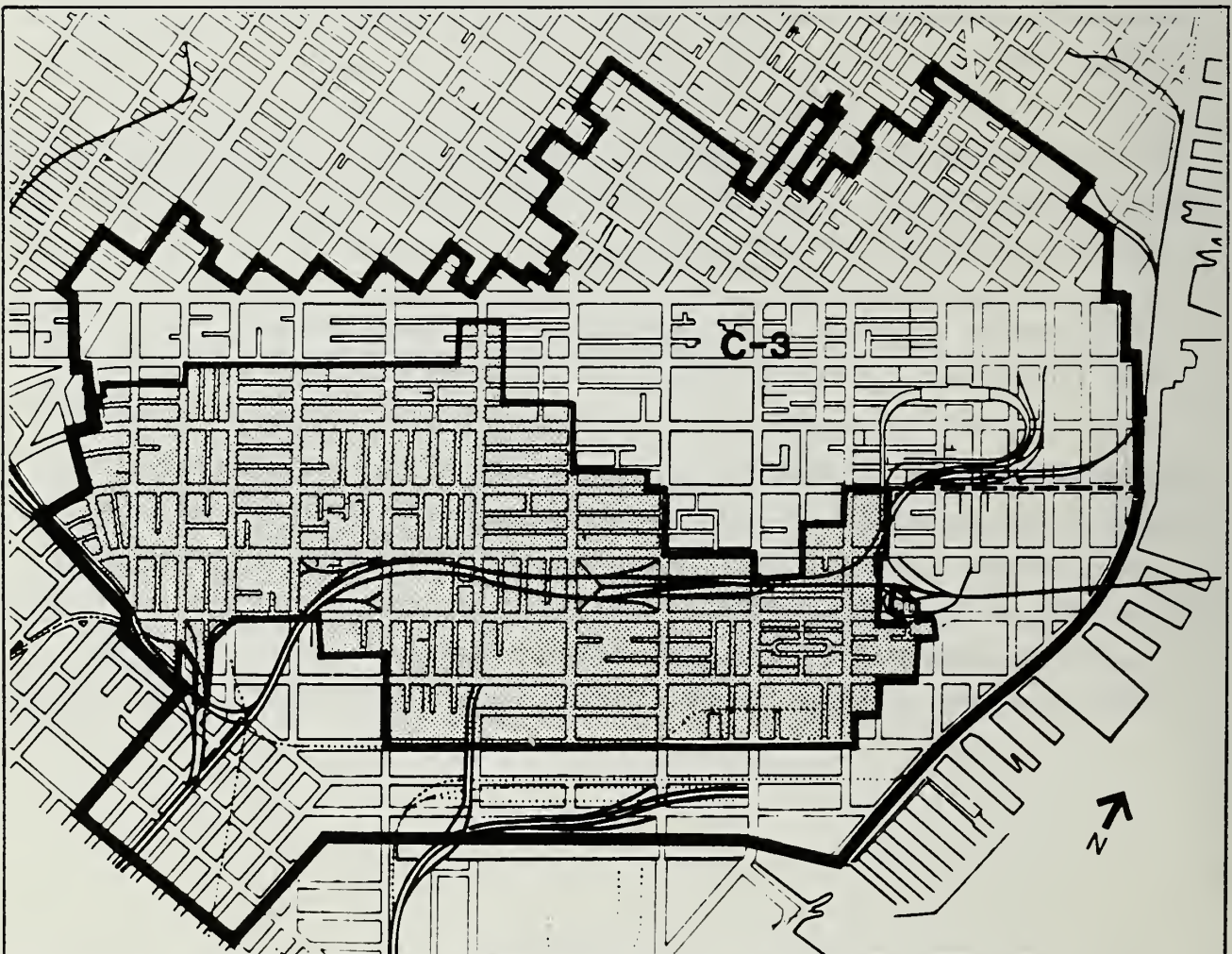
For the South of Market EIR, the SOM/F and the C-3 survey areas are referred to in aggregate as the "survey area." Figure 1 indicates the boundaries of the South of Market/Folsom survey area (and subareas) and the C-3 District survey area.

Non-survey area travel is estimated from regional trip tables produced by MTC and by comparison of employment projections made for the survey area and those made for the greater downtown area.

Travel demand generated by the model is broken down into two types of trips: work and non-work. For the purposes of this analysis, the work category represents only journey-to-work trips; the non-work category represents all other trips. For example, a trip by a downtown employee from her office in the Financial District to her home in the Sunset District of San Francisco in the afternoon would be a work trip. Non-work trips cover a broader base, including trips with a personal, social, educational, or recreational purpose, as well as work-related trips that are not journey-to-work trips. For example, a trip to Union Square for shopping would be classified as a non-work



APPROXIMATE BOUNDARIES OF SOUTH OF MARKET/FOLSOM (SOM/F) SURVEY AREA - WITH TRANSPORTATION ANALYSIS SUBAREAS



**COMBINED SURVEY AREA FOR TRANSPORTATION ANALYSIS:
C-3 DISTRICT AND SOM/F**

trip, or a noontime trip by a downtown employee from his office to a restaurant would be classified as a non-work trip. Likewise, a trip by a downtown employee to another office building in the downtown for the purpose of conducting business would also be classified as a non-work trip because it does not fall into the journey-to-work category.

TRAVEL DEMAND ANALYSIS

The assumptions that go into the model regarding employment projections and travel behavior, and the process of the model are critical to the validity of the model results. Both of these elements are described in the following section in greater detail.

Data Sources

The transportation analysis conducted for the SOM/F and C-3 survey area has built upon and refined the data base used for the Downtown Plan EIR. The SOM model provides new detailed projections for the C-3 District as well as the South of Market/Folsom area. The updated input critical to these revised projections falls into three categories: employment forecasts, place of residence of workers, and travel behavior characteristics.

Detailed employment forecasts prepared by Recht, Hausrath and Associates (RHA) for the Department of City Planning in 1986 provided employment estimates for the base year 1984/85 and the future year 2000 in the SOM/F and C-3 districts./1/ RHA also provided base year and year 2000 residence patterns for SOM/F and C-3 employees, updated from the previously published Downtown Plan EIR./2/

The South of Market/Folsom and the C-3 District Employee Surveys conducted by RHA in 1981/82 are the primary sources for describing survey area journey-to-work travel characteristics for the SOM model./3/ The non-journey-to-work travel characteristics were derived from the 1982

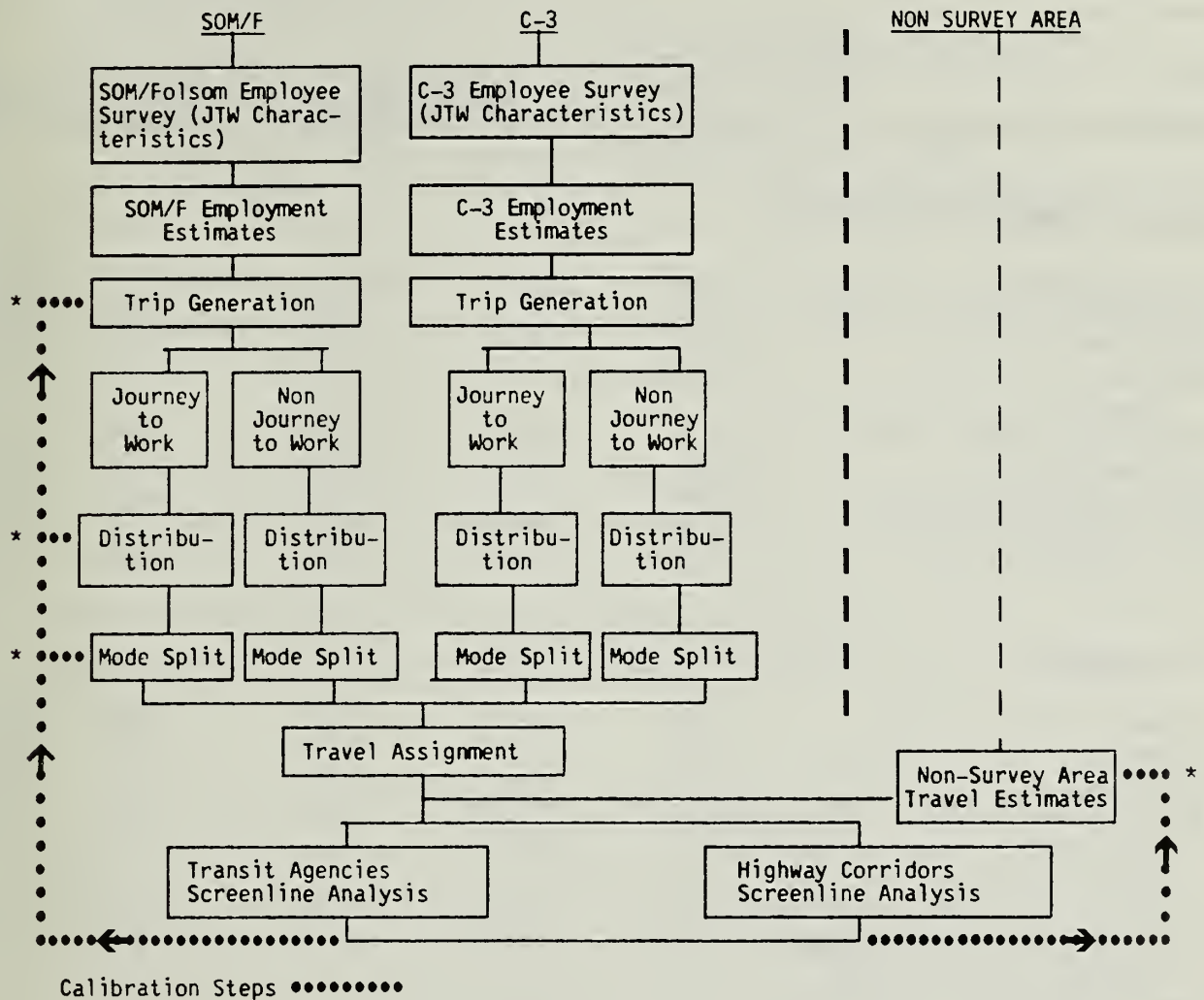
Embarcadero Center visitor survey and the 1985 South of Market visitor survey conducted by Environmental Sciences Associates, Inc. (ESA)./4/ The MTC 1981 Regional Travel Survey serves as a secondary data base for identifying journey-to-work travel characteristics for trips made outside the SOM/F and C-3 districts and for all non-journey-to-work trips./5/ The MTC survey also serves as the critical information link in the calibration process, providing base data for estimating the amount of non-survey area travel at each of the regional screenlines.

MODELLING

Like all transportation models, the South of Market model is based on the four-step transportation planning process: trip generation, trip distribution, modal split, and trip assignment. This process which is used to forecast cumulative travel demand is outlined below. The flow chart presented in Figure 2 visually presents the framework of the SOM modelling process.

Trip Generation Trip generation is the process where the number of trips that are made to and from a specific land use during a specific period of time are estimated. Person trip generation rates for the transportation analysis have been developed by business activity for the South of Market and C-3 districts. These trip rates are applied to employment forecasts to provide an estimate of total travel demand. Detailed employment forecasts have been supplied by RHA and are discussed at length in Appendix B. The SOM model is capable of generating travel demand projections from either a land use (square footage by use type) or an employment base; however, the employment forecasts provide a better basis for the estimation of travel demand. They remove the variability of trip making which could occur as a result of differences in employee densities that occur under a land use analysis base (i.e., two offices with the same amount of square footage may vary considerably in the number of employees stationed within that space).

FIGURE C-2: SOM TRANSPORTATION MODELLING PROCESS



* Locations of manual adjustments to model variables to calibrated model output to screenline values. Adjustments to initial inputs were made for the peak hour and peak period only.

TABLE 1: 24 HOUR PERSON TRIP RATES AND PERCENT OF TRIPS OCCURRING IN THE PM PEAK HOUR AND PM PEAK PERIOD FOR 1984/85 AND 2000

<u>Business Activity</u>	<u>Total Person</u>	<u>PM Peak Hour %</u>		<u>PM Peak Period %</u>	
	<u>Trips (24 Hour)</u> <u>Per Employee</u>	<u>Original/1/</u>	<u>Adjusted/2/</u>	<u>Original</u>	<u>Adjusted</u>
SOUTH OF MARKET/FOLSOM AREA					
Back Office /1/	3.4	16.3	12.5	25.1	20.5
Government Office /2,3,4/	9.0	6.7	6.0	10.0	10.0
Other Office /4,5/	5.0	12.0	8.5	18.0	14.0
Services	10.0	4.1	3.7	12.2	11.0
(Composite Rate) /1,2/					
Sales/Showrooms /1,6/	22.0	8.0	6.6	14.0	12.0
Distribution /1/	12.6	3.2	3.2	6.5	6.5
Convenience Retail /4/	23.8	4.2	4.0	8.4	8.0
Manufacturing /1,3/	4.5	14.0	12.4	21.4	19.0
Hotel/Motel /2,3/	17.9	6.0	5.5	12.0	11.0

C-3 DISTRICT

Primary Office /5,7/	5.0	12.0	8.5	18.0	14.0
Government Office /5,7/	9.0	6.7	6.0	10.0	10.0
Secondary Office /5,7/	5.0	8.0	6.6	14.0	11.5
Branch Banks /3,5/	56.5	1.9	1.6	5.0	4.3
Retail Trade	23.8	4.2	4.0	8.4	8.0
(Composite Rate) /3,5/					
Hotel /3,7/	15.8	3.2	3.2	7.0	7.0
Cultural/Inst./Educational	19.0	5.8	5.8	12.1	12.0
(Composite Rate) /5,9/					
Indst./Warehouse	4.2	16.7	13.0	19.0	18.0
Auto./Parking /5,7,8,10/					

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- /1/ The original peak hour and peak period percentages were derived from surveys, published sources, and the Downtown Plan EIR.
 - /2/ The adjusted peak hour and peak period percentages were revised during the model calibration process.
 - /3/ South of Market Trip Generation Survey conducted September 4, 1985 by ESA.
 - /4/ ITE Trip Generation Manual, Third Edition 1982.
 - /5/ California Department of Transportation (Caltrans) District 4, Progress Report(s) on Trip Ends Generation Research Counts, 14 reports published periodically from 1964 through 1982.
 - /6/ Downtown Plan DEIR EE81.3, Technical Appendix J, Table J.1.

- /7/ Transportation Research Board, Quick Response Urban Travel Estimation Techniques and Transferable Parameters, National Cooperative Highway Research Program Report 187, 1978.
 - /8/ "Gift Center Addition Transportation Impact Analysis" and "Showplace Square Contract Center Transportation Impact Study," August 1985 by Reeves Consulting Service.
 - /9/ Institute of Transportation Engineers, Trip Generation, 1979.
 - /10/ San Diego Association of Governments and Caltrans (District 11), San Diego Traffic Generation, 1981.
 - /11/ Transportation Research Board, Protection of Highway Utility, National Cooperative Highway Research Program Report 121, 1971.
 - /12/ Arizona Department of Transportation, Arizona Traffic Generation, 1979.
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Daily person trip generation rates and peak travel characteristics (the percentage of travel occurring during the peak hour and peak period) were developed for general business activity or land use categories in the SOM/F area based on published sources and field surveys. For standard types of business activities such as retail and primary office, trip rates developed for the Downtown Plan EIR were also used in South of Market area./6/ Person trip rates for these types of activities are assumed to be relatively consistent throughout the city and have already been adjusted to represent downtown San Francisco conditions through the Downtown Plan calibration process.

It was determined that surveys were the most accurate means of estimating trip generation for the more unique types of activities located in the South of Market area because of the lack of detailed information from published sources. A 1985 trip generation survey was conducted by Environmental Science Associates, Inc. (ESA) at seven representative businesses in the SOM area./4/ These surveys provided information on daily, peak period, and peak hour person trip generation and facilitated the development of employee-based trip generation rates. Person trip generation rates for the C-3 District were taken directly from the Downtown Plan EIR. The C-3 trip generation data was originally based on published sources and the peak hour and peak period percentages were adjusted through the model calibration process. The daily person trip generation rates used in the analysis are summarized on Table 1.

In some instances, individual person trip rates for specific business types were collapsed into a composite rate representing a more general business activity. For example, in SOM/F, the person trip rate for services represents a composite rate for various types of service activities: service delivery, service repair, and service institutional.

Adjustments must be made to the total number of person trips generated internal to the survey area (trips which have both an origin and destination within the SOM/F or C-3 survey areas) to avoid double-counting of trips. For example, an office worker may leave her office building and go to the drug store across the street (Link 1), and to the deli next to the drug store (Link 2) before returning to her office (Link 3). While each of these trips is an independent point-to-point trip, a discount must be made because each of the stops in the above scenario represent both an origin and destination for the purposes of describing trip-making activity. The model would treat this condition as six trips or links: to and from the office, to and from the drug store, and to and from the deli, rather than three point-to-point trips. Without this adjustment to internal trips, a double-counting of trips would occur and the travel demand would be overestimated.

The PM peak period and peak hour travel percentages are listed in Table 1. The initial peaking characteristics were derived from published sources, field surveys, and the Downtown Plan EIR (which used the C-3 Employee Survey as a base reference, in addition to published sources). It was necessary to modify the peaking factors during the calibration phase to account for three different types of variation. While the field surveys provide an accurate estimate of peaking characteristics for specific businesses in South of Market, when taken in aggregate it was necessary to modify the peak factors to account for an overall averaging of peaking characteristics among various types of businesses. The peak percentages derived from published data sources require adjustment to account for differences in peaking factors between urban and suburban environments. Most of the published trip surveys are conducted

in suburban environments where peak travel tends to be concentrated in shorter periods of time. Finally, as PM trip-making spreads outside the traditional two hour peak period in San Francisco, adjustments to the observed and previously published data must be made to account for this historical spreading of the peak.

Once trip generation and peaking factors are applied to the employment forecasts, a series of person trip tables categorized by business activity is produced. Person trips are broken out by subarea, by time of day (24 hour, peak period, peak hour), and by work and non-work. Table 2 shows the estimated peak period and peak hour person trips by business activity in the years 1984/85 and 2000.

Trip Distribution The distribution of travel to destinations within the survey area and throughout the region is based on employee residence locations for work trips, and visitor surveys for non-work trips. The C-3 and SOM/F surveys conducted by RHA provide the basis for the residence patterns for the 1984/85 base case. The future year employee residence patterns were derived as part of the housing forecasts prepared for the SOM EIR analysis (see Appendix B)./2/ The destination zones are shown in Figure 3.

The non-work trip distributions are based on visitor surveys conducted in the SOM and C-3 districts. A postcard survey was administered in conjunction with the trip generation survey conducted by ESA at seven businesses in the SOM in 1985./4/ The C-3 district non-work distributions were based on a set of surveys conducted in the Embarcadero Center complex in 1982 and were taken directly from the Downtown Plan EIR./8/

The distributions compiled from the visitor surveys and the residence pattern estimates and forecasts are representative of the 24 hour trip distribution patterns. Derivation of the peak period and peak hour distributions is accomplished in the calibration of the model using the 24 hour distributions

as a starting point. Table 3 shows the distribution of peak period and peak hour travel (by mode) for 1984/85 and 2000 to each destination zone.

Modal Split Mode of travel was derived from survey data. Modal splits for work trips were based on the SOM/F and C-3 District surveys, and are assigned by geographic location by time of day. During the calibration phase of the model, the 1984/85 work modal splits were adjusted to reflect travel behavior changes that had occurred between 1981/82, when the surveys were administered, and the base year for the analysis. The adjustments were based on 1984/85 traffic and transit volume counts for each freeway and transit carrier in the regional system serving San Francisco.

The non-work modal splits for the C-3 district were taken from the 1981 MTC regional travel survey for non-home-based trips./5/ The SOM/F non-work modal splits were compiled from the SOM visitor survey administered by the ESA in 1985./4/

The peak hour and peak period travel by mode by destination is summarized in Table 3. Table 4 identifies the modal split percentages by trip type for 1984/85 and 2000. The outputs from the Trip Distribution and Modal Split phase are generated concurrently. Total work and non-work person trips are presented for each geographic destination by mode by time of day. A subsequent step transforms total person trips into outbound person transit trips and outbound vehicular trips by geographic destination.

Trip Assignment This phase of the process assigns the outbound trips by mode to the regional screenlines via the highway network and transit carriers. Figure 4 identifies the location of these screenlines.

In the North Bay, the Golden Gate Bridge Toll Plaza serves as the regional screenline for vehicular travel, including Golden Gate buses. The Ferry

TABLE 2: COMBINED SOUTH OF MARKET/FOLSOM AND C-3 DISTRICT SURVEY AREA PM PEAK HOUR AND PEAK PERIOD PERSON TRIPS BY BUSINESS ACTIVITY, 1984/85 and 2000

<u>Business Activity</u>	<u>-----1984/85-----</u>			<u>-----2000-----</u>		
	<u>Work</u>	<u>Non-Work</u>	<u>Total</u>	<u>Work</u>	<u>Non-Work</u>	<u>Total</u>
PEAK HOUR (4:30-5:30)						
Primary Office	54,330	11,130	65,460	77,720	15,920	93,640
Government Office	7,920	1,620	9,550	6,510	1,330	7,840
Secondary/Back Office	8,550	2,710	11,270	11,660	3,610	15,260
Branch Banks	2,600	2,120	4,720	3,120	2,550	5,670
Services	1,640	550	2,190	1,570	520	2,090
Cultural/Educational/ Institutional	1,540	7,030	8,570	1,750	7,980	9,730
Sales/Showrooms	2,130	4,320	6,440	3,130	6,350	9,480
Distribution	910	300	1,210	490	160	660
Convenience Retail	12,090	12,090	24,180	14,610	14,610	29,210
Manufacturing	1,450	710	2,160	1,200	590	1,790
Industrial/Warehouse/ Automotive Parking	1,030	1,360	2,390	650	860	1,510
Hotel/Motel	3,700	2,600	6,300	5,290	3,700	8,980
TOTAL	97,990	46,530	144,420	127,680	58,190	185,870
PEAK PERIOD (4:00-6:00)						
Primary Office	89,270	18,540	107,810	127,450	26,780	154,230
Government Office	13,090	2,820	15,910	10,710	2,360	13,070
Secondary/Back Office	16,600	2,900	19,500	22,300	4,030	26,330
Branch Banks	2,660	10,020	12,680	3,200	12,040	15,240
Services	2,150	4,360	6,510	2,050	4,160	6,200
Cultural/Educational/ Institutional	4,610	13,120	17,730	5,230	14,900	20,130
Sales/Showrooms	2,690	9,020	11,710	3,970	13,270	17,240
Distribution	1,850	620	2,460	1,000	330	1,330
Convenience Retail	13,640	34,710	48,350	16,510	41,910	58,420
Manufacturing	1,990	1,330	3,310	1,650	1,100	2,750
Industrial/Warehouse/ Automotive Parking	1,750	1,550	3,300	1,110	980	2,090
Hotel/Motel	8,400	5,280	13,680	12,000	7,520	19,520
TOTAL	158,700	104,260	262,960	207,170	129,380	336,550

SOURCE: San Francisco Department of City Planning. (Columns may not add due to rounding).

TABLE 3: COMBINED SOUTH OF MARKET/FOLSOM AND C-3 DISTRICT SURVEY AREA PM PEAK HOUR AND PEAK PERIOD TRAVEL (PERSON TRIPS) DISTRIBUTION BY MODE - 1984/85 and 2000

Area	Mode	PEAK HOUR						PEAK PERIOD					
		-----1984/85-----			-----2000-----			-----1984/85-----			-----2000-----		
		Work Trips	Non-Work Trips	Work Trips	Non-Work Trips	Work Trips	Non-Work Trips	Work Trips	Non-Work Trips	Work Trips	Non-Work Trips	Work Trips	Non-Work Trips
San Francisco/ Internal Trips /1/	Drive Alone	170	2,250	290	2,900	240	5,230	410	6,640				
	Carpool	70	2,240	120	2,900	80	5,220	150	6,650				
	Other	70	170	120	210	120	380	190	460				
	MUNI	1,500	2,360	2,520	2,920	2,690	5,220	4,480	6,430				
	BART	10	100	10	130	40	230	70	300				
	Walk	2,340	11,200	3,960	13,690	3,490	24,420	5,780	29,750				
	Bicycle	--	80	--	110	--	200	--	270				
	SUBTOTAL	4,200	18,390	7,020	22,850	6,660	40,900	11,090	50,490				
San Francisco/ Northeast	Drive Alone	900	150	1010	210	1,100	370	1,260	490				
	Carpool	410	160	470	210	510	390	600	510				
	Vanpool	--	--	--	--	10	--	10	--				
	Other	170	--	190	10	240	10	260	10				
	MUNI	3,190	90	3,560	120	6,620	210	7,350	270				
	BART	70	10	80	10	70	20	80	30				
	Walk	4,860	320	5,340	400	7,110	710	7,850	890				
	Bicycle	--	10	--	20	--	30	--	40				
	SUBTOTAL	9,600	730	10,650	960	15,650	1,730	17,420	2,230				
San Francisco/ Northwest	Drive Alone	4,190	320	4,610	440	5,960	800	6,570	1,060				
	Carpool	1,700	370	1,860	500	2,950	900	3,220	1,180				
	Other	90	10	100	10	150	20	170	30				
	MUNI	10,550	300	11,610	400	15,930	720	17,560	930				
	BART	20	--	20	--	50	--	50	--				
	Walk	140	60	160	80	150	140	160	180				
	Bicycle	20	20	40	30	30	50	40	70				
	SUBTOTAL	16,720	1,080	18,400	1,450	25,220	2,640	27,760	3,450				

TABLE 3 contd.

Area	Mode	PEAK HOUR				PEAK PERIOD			
		-----1984/85-----		-----2000-----		-----1984/85-----		-----2000-----	
		Work Trips	Non-Work Trips	Work Trips	Non-Work Trips	Work Trips	Non-Work Trips	Work Trips	Non-Work Trips
San Francisco/ Southeast	Drive Alone	3,090	460	3,390	610	4,910	1,100	5,180	1,420
	Carpool	1,220	440	1,430	640	1,430	1,150	1,660	1,480
	Vanpool	110	--	120	--	180	--	180	--
	Other	520	20	560	20	920	40	940	40
	MUNI	2,740	330	2,990	430	4,860	790	5,070	1,010
	BART	1,570	120	1,660	140	2,270	250	2,300	310
	Walk	60	40	60	50	70	90	70	110
	Bicycle	70	20	70	30	110	50	130	70
	SUBTOTAL	9,370	1,470	10,280	1,920	14,740	3,470	15,530	4,450
San Francisco/ Southwest	Drive Alone	4,010	400	4,260	530	5,470	960	5,790	1,250
	Carpool	1,470	500	1,570	660	2,830	1,190	3,010	1,530
	Vanpool	--	--	--	--	70	--	70	--
	Other	130	10	210	20	150	30	250	30
	MUNI	8,680	480	9,360	610	15,260	1,100	16,370	1,400
	BART	1,120	40	1,250	50	2,110	80	2,310	100
	Walk	10	20	10	30	10	50	10	70
	Bicycle	80	20	80	30	140	50	140	70
	SUBTOTAL	15,510	1,470	16,740	1,920	26,040	3,470	27,960	4,450
Peninsula (San Mateo & Santa Clara Counties)	Drive Alone	2,800	650	3,650	810	5,340	1,460	7,000	1,820
	Carpool	3,060	450	4,180	580	4,010	1,041	5,510	1,310
	Vanpool	50	--	70	--	140	--	190	--
	Other	90	10	120	10	170	20	230	30
	MUNI	140	30	190	40	300	70	410	90
	BART	2,260	100	3,040	130	4,000	220	5,410	270
	SamTrans	1,250	60	1,660	70	1,430	120	2,050	150
	Charter Bus	--	--	--	--	30	--	100	--
	SPRR	2,010	100	2,860	130	2,660	230	3,770	270
	SUBTOTAL	11,660	1,410	15,780	1,770	18,070	3,170	24,660	3,940

TABLE 3 contd.

Area	Mode	PEAK HOUR				PEAK PERIOD			
		-----1984/85-----		-----2000-----		-----1984/85-----		-----2000-----	
		Work Trips	Non-Work Trips	Work Trips	Non-Work Trips	Work Trips	Non-Work Trips	Work Trips	Non-Work Trips
East Bay (Alameda, Contra Costa, Napa, & Solano Counties)	Drive Alone	1,570	1,050	1,500	1,290	3,310	2,300	3,150	2,800
	Carpool	3,950	450	3,480	560	7,080	990	6,260	1,220
	Vanpool	1,560	--	2,600	--	2,670	--	4,470	--
	BART	10,760	560	21,710	680	19,230	1,210	38,930	1,460
	AC Transit	5,830	330	9,610	400	8,680	710	14,330	850
	Charter Bus	250	--	410	--	340	--	580	--
	SUBTOTAL	23,930	2,380	39,310	2,910	41,310	5,200	67,720	6,330
North Bay (Marin & Sonoma Coun- ties)	Drive Alone	1,650	630	1,450	800	3,140	1,440	2,670	1,820
	Carpool	1,090	400	1,390	530	2,000	960	2,480	1,250
	Vanpool	120	--	160	--	210	--	290	--
	Other	20	--	30	--	20	--	40	--
	Charter Bus	310	--	440	--	470	--	680	--
	GGT Bus	2,780	150	4,790	190	4,060	330	7,370	400
	Ferry	940	30	1,230	40	1,120	60	1,530	80
	SUBTOTAL	6,910	1,210	9,500	1,550	11,010	2,800	15,040	3,550
TOTAL PERSON TRIPS		97,900	26,040	127,680	31,820	158,700	63,370	207,170	78,900

/1/ The San Francisco internal non-work trips have been adjusted to discount double-counting when both trip ends are in the study area. A discount is not necessary for work trips internal to the study area because these home-based work trips are generated only from the work end of the trip.

NOTE: This table presents total inbound and outbound travel demand from the South of Market and C-3 survey areas. The distribution of travel and the modal split assignments occur simultaneously in the transportation model.

Column totals may not add due to rounding.

SOURCE: Department of City Planning

TABLE 4: COMBINED SOUTH OF MARKET/FOLSOM AND C-3 DISTRICT SURVEY AREA MODAL SPLIT PERCENTAGES - WORK AND NON-WORK FOR 1984/85 AND 2000

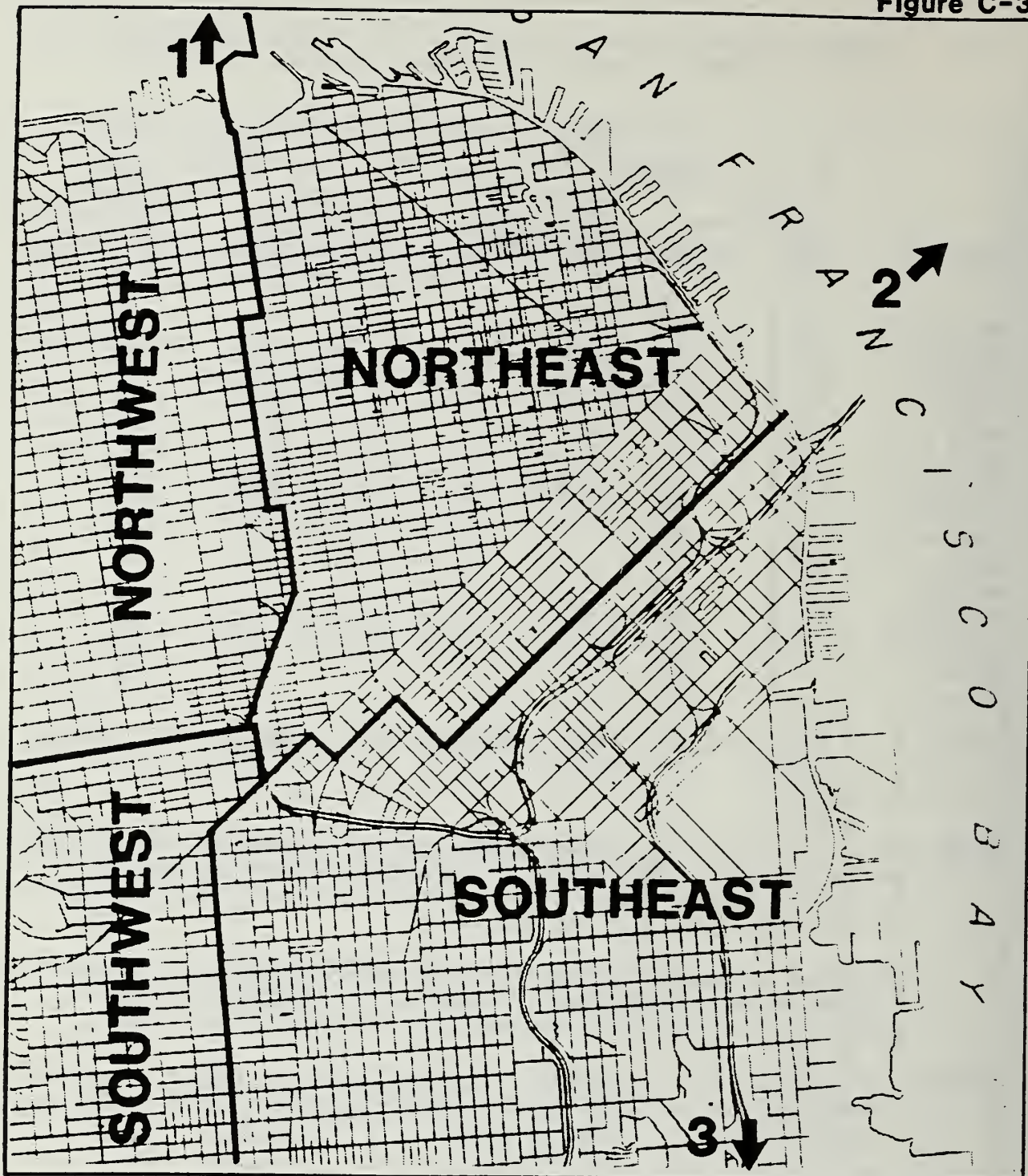
Mode	-----1984/85-----				-----2000-----			
	<u>Work</u>		<u>Non-Work</u>		<u>Work</u>		<u>Non-Work</u>	
	<u>Peak Hour</u>	<u>Peak Period</u>	<u>Peak Hour</u>	<u>Peak Period</u>	<u>Peak Hour</u>	<u>Peak Period</u>	<u>Peak Hour</u>	<u>Peak Period</u>
Drive Alone	18.8	18.6	17.5	18.1	15.8	15.5	18.0	18.5
Carpool	13.2	13.2	15.6	16.4	11.4	11.0	16.2	16.8
Vanpool	1.9	2.1	--	--	2.3	2.5	--	--
Other	1.1	1.1	.9	.8	1.0	1.0	.8	.8
MUNI	27.4	28.8	12.8	12.8	23.7	24.7	12.8	12.8
BAR1	16.1	17.5	2.2	2.2	21.7	23.7	2.2	2.1
AC Transit	6.0	5.5	.7	.7	7.5	6.9	.7	.7
SamTrans	1.3	.9	.1	.1	1.3	1.0	.1	.1
Charter Bus	.6	.5	--	--	.7	.7	--	--
SPRR	2.1	1.7	.2	.2	2.2	1.8	.2	.2
GGT Bus	2.8	2.6	.3	.3	3.7	3.6	.3	.3
GGT Ferry	.9	.6	.1	.1	.9	.6	.1	.1
Tib Ferry	.1	.1	--	--	.1	.1	--	--
Walk	7.6	6.8	49.1	47.8	7.5	6.7	48.0	46.9
Bicycle	.2	.2	.5	.6	.1	.1	.5	.6
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

NOTES: Modal splits for Year 2000 are based on the assumption that the Bay Bridge and Golden Gate Bridge are capacity constrained and that additional transit capacity (as confirmed by transit operators) will be available in each of the corridors.

Decreases in modal share for MUNI between 1984/85 and 2000 result from a lower percent of employees living in the City based on RHA residential distribution estimates and employment projections.

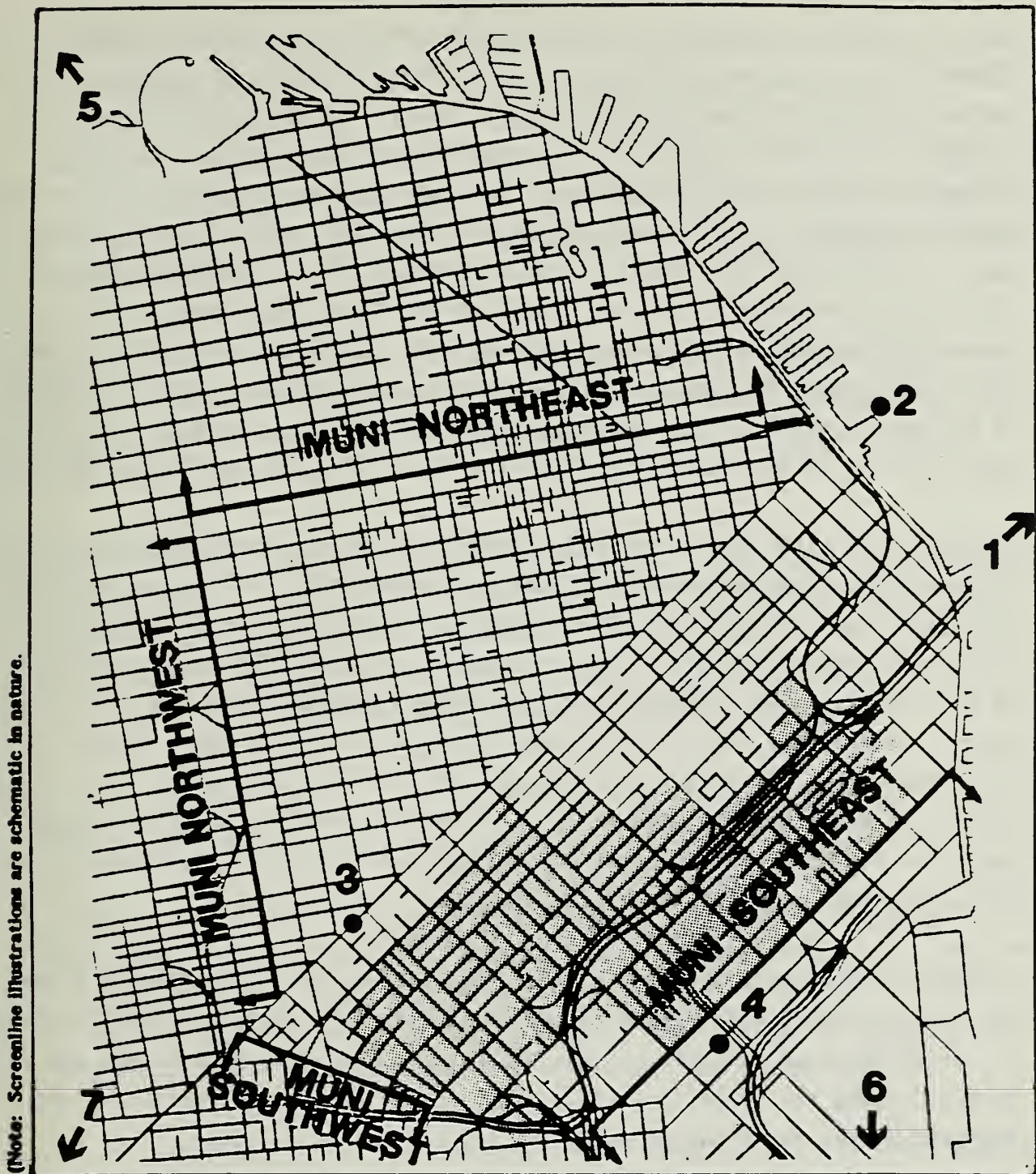
SOURCES: Department of City Planning, Downtown Plan EIR, EE81.3, South of Market/Folsom and C-3 District Employee Surveys, and MTC 1981 Travel Survey.

Figure C-3




SAN FRANCISCO AND REGIONAL TRAVEL ASSIGNMENT AREAS

- 1 - North Bay - Marin, Sonoma
- 2 - East Bay - Alameda, Contra Costa, Napa, Solano
- 3 - South Bay - San Mateo, Santa Clara



LOCATION OF TRANSPORTATION SCREENLINES

 South Of Market Plan Area

- 1 TRANSBAY TUBE - Screenline for BART Transbay
- BAY BRIDGE TOLL PLAZA - Screenline for AC Transit, and Route I-80 Vehicles
- 2 SAN FRANCISCO BAY - Screenline for Tiburon, Sausalito and Larkspur Ferries
- 3 WEST OF BART CIVIC CENTER STATION - Screenline for BART West bay
- 4 WEST OF CALTRAIN DEPOT - Screenline for Caltrain
- 5 GOLDEN GATE BRIDGE TOLL PLAZA - Screenline for Golden Gate Transit Buses, and Route U.S. 101 (North) Vehicles
- 6 SAN FRANCISCO COUNTY LINE - Screenline for SamTrans (Mainline Routes), and Route U.S. 101 (South) Vehicles
- 7 SAN FRANCISCO COUNTY LINE - Screenline for SamTrans (Daly City) and Route I-280 (South) Vehicles

Building terminal serves as the regional screenline for Golden Gate and Tiburon Ferry service. The East Bay screenline for vehicular travel, including AC Transit buses, is the Bay Bridge Toll Plaza (while drivers actually only pass through the toll plaza when travelling into the city, screenline counts are also taken at a location adjacent to the toll plaza for outbound traffic). The screenline for East Bay BART travel is the Transbay Tube. In the South Bay, traffic flow on Highway 101 and I-280 and SamTrans ridership is measured at the San Francisco/San Mateo county line. The screenline for BART West Bay (Peninsula) travel is located just west of the Civic Center BART station, and the screenline for Caltrain is the SP terminal at 4th and Townsend. These three corridors (North Bay, East Bay, and South Bay) account for the majority of travel leaving San Francisco in the PM period.

Transit travel from the survey area to the rest of San Francisco is calibrated at four MUNI screenlines which basically encompass the C-3 District and South of Market area. These screenlines provide a cordon point at the boundaries of the survey area to establish the San Francisco corridors (shown in Figure 4) to which MUNI routes are assigned. The screenline counts are compiled from counts taken at the maximum load point (MLP) locations for each of the individual lines crossing the screenline (however, the MLP do not occur in the exact alignment shown in Figure 4). This permits analysis of a worst case condition for MUNI, but requires manipulation of the travel assignment formula to reflect the variation in MLP locations.

The MUNI screenline boundaries can be roughly described as Washington Street for trips travelling to northeast and northwest San Francisco, Franklin Street for trips destined to northwest San Francisco, South Van Ness Avenue and the Central Skyway for trips to southwest San Francisco and the Peninsula, and Townsend Street for trips to southeast San Francisco.

Specific formulas have been developed to assign MUNI, BART, and Peninsula vehicle trips to the appropriate corridors as there is not always a straightforward association between the trip destination and the screenline it

crosses. For instance, not all MUNI trips to the Northwest sector of the city can automatically be assigned to the northwest screenline because of the configuration of the bus routes. Travel crossing the northeast screenline is composed of travel destined for the Northeast sector of the city, outside the C-3 District, and for destinations in the Marina and Cow Hollow neighborhoods (for example, via the 30-Stockton and the 41-Union Street) which are in the Northwest sector of the city.

Once the survey area travel is appropriately assigned to screenlines, the non-survey area travel component is added. The balancing between the survey area and non-survey area travel components is the final stage of the calibration procedure.

Upon making estimates for total travel at each of the respective screenlines, an assessment of level of service is made for both the highways and transit systems. The level of service categories used for each of the freeway and transit analyses are shown in Tables 5 and 6. Figure 5 visually depicts the conditions at various levels of crowding on transit vehicles.

Model Calibration

The model is initially run with an unadjusted set of data, ie. data that has come directly from the updated 1985 RHA employment estimates, the SOM/F and C-3 employee surveys, the MTC Travel surveys (non-work mode splits for C-3), and the calibrated Downtown Plan EIR model. The calibration process allows adjustment to this initial data base to account for the following:

- o potential differences between travel behavior of the total population and the sample population surveyed,
- o variation between daily travel demands, i.e. the counts taken from a specific day may not exactly correspond to an average daily demand as the model is designed to estimate,

TABLE 5: TRAFFIC LEVELS OF SERVICE FOR FREEWAYS

<u>Level of Service</u>	<u>Description</u>	<u>Volume/Capacity (V/C) Ratio /1/</u>
A	Level of Service A describes a condition of free flow, with low volumes and high speeds. Traffic density is low, with speeds controlled by driver desires, speed limits, and physical roadway conditions. There is little or no restriction in maneuverability due to the presence of other vehicles, and drivers can maintain their desired speeds with little or no delay.	0.00 - 0.60
B	Level of Service B is in the higher speed range of stable flow, with operating speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed and lane of operation. Reductions in speed are not unreasonable, with a low probability of traffic flow being restricted.	0.61 - 0.70
C	Level of Service C is still in the zone of stable flow, but speeds and maneuverability are more closely controlled by the higher volumes. Most of the drivers are restricted in their freedom to select their own speed, change lanes, or pass. A relatively satisfactory operating speed is still obtained.	0.71 - 0.80
D	Level of Service D approaches unstable flow, with tolerable operating speeds being maintained though considerably affected by changes in operating conditions. Fluctuations in volume and temporary restrictions to flow may cause substantial drops in operating speeds. Drivers have little freedom to maneuver, and comfort and convenience are low, but conditions can be tolerated for short periods of time.	0.81 - 0.90
E	Level of Service E cannot be described by speed alone, but represents operations at even lower operating speeds (typically about 30 to 35 mph) than in Level D, with volumes at or near the capacity of the highway. Flow is unstable, and there may be stoppages of momentary duration.	0.91 - 1.00
F	Level of Service F describes forced flow operations at low speeds (less than 30 mph), in which the freeway acts as storage for queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially and stoppages may occur for short or long periods of time because of downstream congestion. In the extreme, both speed and volume can drop to zero.	1.00+

/1/ Capacity is defined as Level of Service E.

Table 5 cont'd.

SOURCE: Environmental Science Associates, Inc. from information in the Highway Capacity Manual, Special Report 87, Highway Research Board, 1965.

TABLE 6: PASSENGER LEVELS OF SERVICE ON BUS TRANSIT

<u>Level of Service</u>	<u>Description</u>	<u>Volume/Capacity (V/C) Ratio /1/</u>
A	Level of Service A describes a condition of excellent passenger comfort. Passenger loadings are low with less than half the seats filled. There is little or no restriction on passenger maneuverability. Passenger loading times do not affect scheduled operation.	0.00 - 0.50
B	Level of Service B is in the range of passenger comfort with moderate passenger loadings. Passengers still have reasonable freedom of movement on the transit vehicle. Passenger loading times do not affect scheduled operations.	0.51 - 0.75
C	Level of Service C is still in the zone of passenger comfort, but loadings approach seated capacity and passenger maneuverability on the transit vehicle is beginning to be restricted. Relatively satisfactory operating schedules are still obtained as passenger loading times are not excessive.	0.76 - 1.00
D	Level of Service D approaches uncomfortable passenger conditions with tolerable numbers of standees. Passengers have restricted freedom to move about on the transit vehicle. Conditions can be tolerated for short periods of time. Passenger loadings begin to affect schedule adherence as the restricted freedom of movement for passengers requires longer loading times.	1.01 - 1.25
E	Level of Service E passenger loadings approach manufacturers' recommended maximum and passenger comfort is at low levels. Freedom to move about is substantially diminished. Passenger loading times increase as mobility of passengers on the transit vehicle decreases. Scheduled operation is difficult to maintain at this level. Bunching of buses tends to occur which can rapidly cause operations to deteriorate.	1.26 - 1.50

F Level of Service F describes crush loadings. Passenger 1.51 - 1.60 comfort and maneuverability is extremely poor. Crush loadings lead to deterioration of scheduled operations through substantially increased loading times.

SOURCE: Environmental Science Associates, Inc. from information in the Interim Materials on Highway Capacity, Transportation Research Circular 212, pp. 73-113, Transportation Research Board, 1980.



K INGLESIDE - VAN NESS STATION

Wednesday, September 9, 1981 - 8:00 A.M. - Inbound



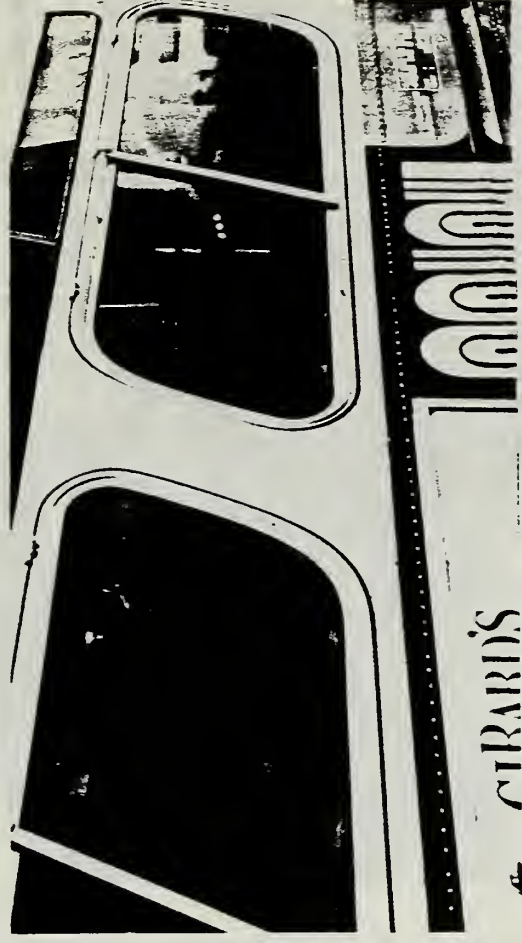
N JUDAH - VAN NESS STATION

Wednesday, September 16, 1981 - 5:00 P.M. Outbound



38 GEARY - VAN NESS AVE. AND O'FARRELL ST.

Wednesday, October 21, 1981 - 9:00 A.M. - Inbound



38 GEARY - VAN NESS AVE. AND GEARY BLVD.

Wednesday, October 21, 1981 - 4:20 P.M. - Outbound

FIGURE C-5

PHOTOS OF PEAK MUNI LOADING CONDITIONS



30X MARINA EXPRESS - BAYSHORE AVE. AND ARIETA AVE.
Wednesday, October 7, 1981 - 8:00 A.M. - Inbound



J CHURCH - CHURCH ST. AND DUBOCE AVE.
Tuesday, September 29, 1981 - 9:00 A.M. - Outbound

FIGURE C-5 (CONTINUED):
PHOTOS OF PEAK MUNI LOADING CONDITIONS



M OCEAN VIEW - CIVIC CENTER STATION
Wednesday, September 9, 1981 - 8:20 A.M. - Inbound



L TARAVAL - VAN NESS STATION
Wednesday, September 16, 1981 - 4:50 P.M. - Outbound



14 MISSION - MISSION STREET AND SOUTH VAN NESS AVE.
Tuesday, September 29, 1981 - 5:45 P.M. - Outbound



N JUDAH - DUBOCE AND CHURCH
Wednesday, June 8, 1983 - 8:00 A.M. Inbound

FIGURE C-5 (CONTINUED):
PHOTOS OF PEAK MUNI LOADING CONDITIONS

- o to reflect changes in travel behavior which may have occurred between 1981/82 and 1984/85, and
- o to account more accurately for the non-survey area travel than was possible in the initial calibration of the Downtown Plan model.

The 1981 MTC Regional Travel Survey and the 1984/85 updated screenline counts provide the basis for most of this expanded calibration exercise./9/

The model calibration procedure, which starts with the unadjusted data described above, is ultimately trying to replicate the actual travel counts at the survey area screenlines during 1984/85 in order to produce travel demand relationships that are reasonable for analyzing future travel demand conditions. In addition, the challenge is to differentiate in a rational manner between travel contributed by the SOM/F and C-3 survey areas and the non-survey area. The non-survey area component is composed of travel through the survey area, generated from the rest of San Francisco and the rest of the region.

Calibration occurs at several steps of the process as noted below to arrive at the desired screenline results (refer to Figure 2). The MTC Travel Survey and the RHA Employee Survey data were used to establish a range of reasonableness for making adjustments to peaking characteristics, trip distributions, and modal splits.

Trip Generation The 24 hour trip rates for the identified business activities are not modified in the model; however, the percentages travelling during the peak hour and peak period (peaking characteristics) have been amended from those calibrated for the Downtown Plan EIR. The percentages of daily travel occurring in the peak hour and period were reduced from those calibrated in the Downtown Plan EIR. The changes reflect a spreading of peak travel beyond the previously identified two hour peak travel period, and the initial

adjustments to the published sources based on employee survey results which recorded the time employees departed from work rather than the time they were actually travelling across the screenlines.

Trip Distribution RHA as part of their residence pattern estimates provided updated residence pattern distributions for SOM/F and C-3 district employees for 1985. These distributions were used for the 24 hour trip distributions. However, adjustments to travel distributions during the peak hour and peak period were required, as different corridors and different modes peak at different times.

Modal Split Modal split information was provided in the 1981/82 employee surveys. Based on actual observed data at the screenlines there has been a reduction in transit travel and a modest increase in auto travel between 1981/82 and 1984/85. This required adjustments to the peak hour and peak period mode split factors developed from the original survey results.

Travel Assignment A travel assignment formula was developed for the Downtown Plan EIR model. Minor adjustments to this formula were required for the South of Market model calibration to reflect the incorporation of the SOM/F into the survey area boundaries. Also, the locations where maximum load point counts were taken have shifted from locations used for the 1981 Downtown Plan EIR model calibration.

Once the model is validated to accurately replicate the base case conditions at the screenlines, future travel demand can be projected. The base assumption in the forecasting stage is that travel behavior will adapt over time in response to capacity constraints in the transportation system. The assumptions of year 2000 regional transportation system capacity used in the transportation analysis in this EIR are described below.

Future Transportation System Capacity - Assumptions

The environmental analyses for the SOM Plan incorporate assumptions about future transportation improvements. Those improvements are founded upon stated objectives and priorities established in transportation plans and policies for the Bay Area region. Based on improvements that have occurred in the past, it is reasonable to expect that transportation improvements will occur in the future.

The transportation improvements assumed in the analysis are those which were deemed reasonably assured of implementation within the forecast period. They are not identified as being fully assured, because the various funding processes upon which they all rely are determined on annual basis. A detailed discussion of the planning and priority setting process for regional transportation improvements is presented below.

The regional and project-level transportation facilities and services described in the following paragraphs, in addition to existing transportation facilities and services, were assumed in the analysis of future impacts. Projects or proposals not specifically mentioned are not included in the analysis of future travel conditions because those projects failed to meet the three criteria used to establish the likelihood of their availability by 2000, or are considered to have little or no impact on access to San Francisco or the Project Area. Transportation projects that have or will have minimal effect on accessibility to the SOM or surrounding areas include those projects that are too far away, will provide additional capacity only to bypass short sections of congested roadways, or may not increase overall levels of transit service but may just shift riders from one transit mode to another.

The definition of the list of highway and transit facilities and services assumed to exist by 2000 is based on the formal transportation planning and programming process that already exists to determine priorities for funding capital projects, operations and maintenance. If this planning process did

not exist, it would not be possible to assume any increases in transportation capacity.

A formal planning process was established by Federal mandate for all metropolitan areas in the 1960s so that each metropolitan planning organization would prepare a long-range regional transportation plan and a supporting five or 10 year capital budget. In the nine-county Bay Region, the Metropolitan Transportation Commission was established in 1972 to prepare the regional planning and programming documents required by the Federal Department of Transportation to approve Federal funding for transportation projects. MTC was also given additional powers by the State Legislature to approve Federal or State funding only for those transportation projects found by the Commission to be in conformance with MTC's Regional Transportation Plan (RTP). It is for this reason that the list of projects considered to provide "reasonably assured capacity" are all described and included in the latest version (1987) of MTC's RTP, as capital projects not included in the RTP cannot receive State or Federal funds for preliminary engineering, design, right-of-way acquisition, construction or purchase of equipment.

The capital projects included in MTC's RTP are defined in a variety of ways. Some are identified through planning studies initiated by MTC in cooperation with counties and cities, and others are identified through planning studies initiated at the local level, including transit agencies, or planning or public works departments.

Although the MTC RTP can be amended every year, a formal amendment process usually occurs every two years. It is at that time that the recommendations of recently completed studies, or in some cases, requests by public officials and citizens to change the RTP, are considered by the Commission.

The RTP contains descriptions of the major transportation facilities and services that MTC would endorse for development through the use of local, state and federal funding, but the RTP does not describe when those projects

should be implemented. The distinction between priorities for longer-term and shorter-term implementation occurs every year when MTC adopts the five-year Regional Transportation Improvement Program (RTIP). The RTIP identifies all of the capital projects that MTC is recommending to the California Transportation Commission (CTC) and the Federal Department of Transportation for allocations of State and Federal funding. The final and most important determination of regional priority setting occurs when MTC approves the upcoming five-year RTIP which includes the listing of projects to be implemented in the first year of the next five-year programming cycle. The RTIP is then submitted to the CTC for that policy-making body to determine statewide funding priorities and allocate discretionary funds among projects submitted by different regional transportation planning agencies.

The projects to be included in the RTIP are nominated by agencies having the specific responsibility for the construction, operation or maintenance of a particular type of transportation facility or service. Caltrans, for example, would submit projects for funding on the State Highway System (U.S. 101, I-280, I-80). County or City Public Works Departments would submit projects for funding on major local roads (Third Street, King Street). Each transit operator would nominate projects such as the purchase of buses and other equipment; or the construction of maintenance facilities, transit stations, or park-and-ride lots.

A formal planning process has been established by the Federal Urban Mass Transportation Administration requiring transit operators receiving federal capital or operating assistance to annually prepare a five-year Short Range Transit Plan (SRTP). The SRTP describes the existing ridership and revenue situation, presents an evaluation of ways to eliminate or reduce service deficiencies, and concludes with a presentation of fiscally-balanced service plan and capital facilities plan. (Fiscally-balanced means that the transit operator has projected revenues from fares, advertising, locally earmarked taxes, and State and Federal funding sources to develop a service plan that can be implemented by the operator and a capital plan to support the service

plan). Just as the MTC RIP describes what should happen but the RTIP determines, when it could happen, the SRTP's describe what general levels of service should be provided five years out but the detailed route-level service decisions are made on an annual basis.

In summary, while a formal process has been established to determine which projects will be built or operated in the region, the determination of priorities is an on-going political process with annual milestones. Capital projects that are included in the first year of the next five-year RTIP are considered to have the highest priority for implementation, for if those projects do not receive all the State and Federal funding that is being sought for them, then the political understanding is that those same projects will be resubmitted in the next RTIP as projects to be funded in the first year.

Perhaps the major uncertainty affecting the implementation of a specific project, once that project has received political endorsement at the local and MTC levels, is that changes in the availability of funding will modify the project's implementation schedule. Almost all transportation projects, especially those providing regional service, are funded using a variety of local, state and federal revenue sources. Highway and street projects are funded using gas taxes collected at the state and federal levels, municipal or county general funds (derived from a variety of sources), and if appropriate earmarked sales taxes and bridge tolls. Transit projects are funded using passenger fares, advertising, special fees (such as the Transit Impact Development Fee in San Francisco), State Transit Development Act (TDA) funds, State Transportation Planning & Development (TP&D) funds Article XIX (California Constitution) funds for guideways, UMTA discretionary and block grants, transfer of Federal Aid Interstate capital grants for cities that have chosen not to build an approved interstate highway. While some funding sources are earmarked for highways or transit, some funding can be used either for transit or highway projects. Federal Aid Urban (FAU) funds, for example, are apportioned to counties for street or transit purposes. Local or regional policy bodies may also decide to use sales taxes (if approved by the electorate) for transit and/or highway purposes.

Based on the current status of planning and programming decisions, the list of projects included in the definition of reasonably assured capacity for the year 2000 can be subdivided further into the following categories:

- The first category includes projects that will be built within five years or fewer because funding has already been allocated to them by MTC, the CTC and the Federal Department of Transportation. The following projects are in this category: increasing BART's passenger-carrying capacity by adding 150 "C" cars, building a turnback facility at Daly City and a yard at Colma, installing an automated wayside train control system, and providing several thousand additional parking spaces and enhancing feeder bus services to BART stations; widening u.s. 101 from San Carlos south to the Santa Clara County line; building the MUNI Metro turnback and extending MUNI Metro to the CalTrain terminal; and deploying additional MUNI light rail vehicles and extending streetcar service ("F" and "J" lines).
- The second category includes transit projects that would be consistent with current short range transit plans or highway projects included in the RTIP that have not been allocated full funding as follows: providing High Occupancy Vehicle (HOV) lanes on US 101 between the Richardson Bay Bridge and Novato, widening I-80 and adding HOV lanes, and building reversible facility for HOV lanes at the I-580/I-880/I-80 interchange. Funding has already been allocated for portions of these projects, as for example, extending HOV lanes on US 101 in Marin County. As the regional programming consensus is based on continuing to fund projects for which at least partial construction is underway, and as roadway and HOV projects are designed to be built and operate in segments, these projects have a very high probability of being completely funded through upcoming RTIP's.
- The third category includes projects that the transit operators have defined in a 10-year (or longer) capital improvement program as follows:

increasing MUNI peak-period passenger-carrying capacity across each screenline within San Francisco, and providing additional SamTrans service into San Francisco. While UMTA requires transit operators to evaluate their capital needs only five years out when updating their SRTP's annually, some transit operators have used local and regional growth projections for their service areas to define longer-term capital requirements. MUNI has prepared a forecast of capacity required by corridor to serve travel demand anticipated due to employment and population levels in San Francisco in about the year 2002. While funding for these capacity increases is not budgeted, this official planning conclusion will serve as MUNI's justification to seek the funding required to serve anticipated demand for MUNI service. SamTrans has developed a capital plan for the year 2000, which is based on the assumption that CalTrain will not have been extended into downtown San Francisco. SamTrans has the capital and operating funds from its earmarked local sales tax fund to implement this long range growth concept.

- The fourth and last category includes projects that the transit operators have indicated they would implement when travel demand would warrant: increasing AC Transit's peak-period Transbay passenger-carrying capacity and increasing Golden Gate Transit's transbay service. The modest AC Transit increases would require additional Bridge toll funding from MTC, and Golden Gate Transit would seek increases in Golden Gate Bridge tolls to implement the additional services. Both transit agencies have increased and decreased their Transbay services in reaction to changes in employment in Downtown San Francisco, and fluctuation in gasoline prices and availability. Both operators indicated that they would seek the funding required in the future to serve anticipated Transbay travel demand.

There are other transportation projects that have been proposed at one time or another that are not considered reasonably assured. Those projects are not included in the MTC RTP or have political opposition. For example, regional consensus did not exist at the time this EIR analysis was completed on the

Caltrain extension into Downtown San Francisco.

Regional Transportation Facilities and Services - 2000

Highways. By the year 2000, Route 101 is assumed to be widened to eight lanes through San Mateo, Santa Clara and Marin Counties. In San Mateo County, only the segment south of San Carlos remains to be widened, and Caltrans has identified this project as being of high priority for construction./10/ Santa Clara County has advanced local funds to the State for widening Route 101 from the San Mateo County line to Bernal Road in south San Jose. In Marin County, Route 101 is programmed to be widened to eight lanes from North San Pedro Road in San Rafael to Atherton Avenue in Novato. Widening of Route 101 through central San Rafael is also a high-priority project, assumed to be funded and constructed by the year 2000./11/ Widening of Highway 101 in Marin County would provide continuous HOV lanes from Larkspur to Novato, and the seventh and eighth lanes of a widened Highway 101 in Santa Clara are also likely to be devoted to HOV.

I-280 in San Francisco is assumed to terminate at Sixth Street, with the Fourth Street off-ramp removed. Implementation of this project is to be financed with funds transferred from the I-280/Embarcadero Freeway connection that was withdrawn from the Federal Interstate System./12/

HOV lanes are assumed to be provided on I-80 eastbound from the Bay Bridge area to just north of Ashby Avenue Berkeley), with westbound HOV lanes added from Willow Avenue (Rodeo) to McBryde Avenue (Richmond). A short stretch of westbound HOV lanes will be built on I-580 at the I-80 /I-580 interchange./13/ Reconstruction of the I-880 / I-580 / I-80 distribution structure at the eastern (Toll Plaza) terminal of the Bay Bridge is not anticipated, but a reversible facility for HOV's is assumed to exist from just west of the distribution structure east to the Route 24 / I-580 interchange./14/ I-880 (Nimitz Freeway) is to be upgraded through Alameda County as a result of its designation as an interstate facility and the use by Alameda County of local

sales tax revenues to pay for widenings and interchange improvements. (The widening of I-880 is planned for the southern portion, where between Union City and Santa Clara County the freeway is to be at least 8 lanes wide.)

Transit. The analysis of year 2000 travel conditions at screenlines relied on comparing the forecasts of year 2000 transit travel demand against the "reasonably assured" capacities identified by each transit operator serving San Francisco. While transit operators typically rely on five-year planning horizons to describe the facilities and services that they are committed to, a longer-range projection of capacity was requested of each transit operator.

Each transit operator considered operational or technological constraints, current financial and financing capabilities, and explicit or implicit system development policies to define the following projections of future service capacity/15/:

- MUNI's service capacity is projected to increase because of the MUNI Metro Turnback project, extensions of MUNI Metro, and the deployment of articulated coaches increasingly to replace standard coaches on high-ridership routes. The number of seats provided by MUNI would increase because of capital projects included in MUNI's 1988-1992 Capital Improvement Program. The number of person-carrying spaces provided by MUNI would increase more rapidly than the number of seats, because 1) articulated buses would replace standard buses on some routes, and 2) the number of light rail vehicles (LRV) and refurbished streetcars, all of which also contain more spaces per vehicle than buses, would increase more rapidly than the number of buses.
- BART's service capacity is projected to increase because headways of trains serving the East Bay lines would decrease from 3.75 minutes to 2.25 minutes during the peak hour and from 5.0 to 3.0 minutes during the second peak-hour. Those increases in Transbay capacity would occur because of deployment of 150 new C cars; construction of the Daly City Turnback/Yard;

and technological improvements in automatic train control, wayside train control and upgraded electrification included in BART's latest 5-Year Plan. BART could increase Westbay capacity coincident with increasing Transbay capacity, if warranted by travel projections.

- Golden Gate Transit would attempt to secure the financial resources necessary to provide the expanded level of bus and ferry service required to serve increased travel demand between the North Bay counties and San Francisco.
- Caltrans, the agency currently in charge of CalTrain, envisions no increase in peak-period service until the downtown extension is constructed. As the extension has not secured funding, Caltrans has assumed the provision of the same number of peak-period trains as in 1985.
- SamTrans is projecting to nearly double the number of bus trips scheduled into downtown San Francisco, because of historical ridership growth trends and the District's assumption that CalTrain will not be extended to downtown by the year 2000. Although Sam Trans' latest Short Range Transit Plan does not specify the acquisition of all the buses required for this large increase in capacity, the availability of Federal capital funding for new buses is seen as the only significant factor constraining this level of expansion.

Future Projections

In keeping with the city's "Transit First" policy, it has been assumed that the downtown area will remain congested, the parking supply will be controlled, and future growth in the San Francisco Downtown and South of Market areas will have to be primarily accommodated through mode shifts from single occupant autos to transit and to carpools and vanpools.

The propensity for these modal shifts to occur is based on a number of factors affecting the individual traveler's decision. The most common factors include convenience and comfort of transit service, length of travel time, and cost of travel and parking. In the SOM analyses, roadway capacity constraints and the resultant congestion are used to assess the likely changes in modal split. Under congested roadway conditions, the time of travel is increased with accompanying costs, creating a disincentive for commuters to drive alone. However, shifts from single occupant autos to transit can be expected to occur only if transit offers a reasonable alternative to the auto. Improvements to transit comfort, reliability, frequency, and speed can exert a positive influence in drawing people out of their cars and onto buses, trains, and ferries.

For the purposes of the future year analysis, the basic infrastructure of the transit system was assumed to remain the same. For example, an extension of Caltrain to the Transbay Terminal was not assumed. However, as discussed, improvements to transit system capacities are expected to occur over time. The future capacities assumed for 2000 were detailed in the preceeding section. These capacity estimates are intended to provide a reasonable, yet conservative, estimate of future capacity.

In assessing future impacts on the regional transportation network the travel generated by the SOM/F and C-3 survey area must be viewed within the context of all regional travel. Commuters from the SOM/F and C-3 survey area were assumed to modify their travel behavior in the future. However, this analysis does not assume any changes in travel behavior for trips generated from outside the survey area.

From a regional perspective the concentration of jobs and transit service in San Francisco make commuters to and from the downtown the most likely targets for capturing a greater modal share on transit. Also the greater concentration of commuters provides greater opportunities for the formation of vanpools and carpools. In keeping with these assumptions, vehicular travel

from the South of Market/Folsom and C-3 District survey area was assumed to remain relatively constant at 1984/85 levels. Without additional highway capacity, new travel demand generated from the survey area would have to be accommodated through increased use of transit and ridesharing because any remaining highway capacity in 2000 during the two hour peak period is assumed to be taken by non-survey area travel demand.

While this approach would mitigate impacts generated from the project area, modification of travel behavior for people commuting to and from the San Francisco downtown area is not expected to solve what is a regional problem. For example, even with the travel changes projected for survey area commuters, the projected demand at the Bay Bridge screenline in 2000 is still expected to exceed capacity. It is recognized that changes will have to occur at a regional level to address these future transportation problems.

Survey Area Travel For the year 2000, work and non-work trips were treated independently with respect to the potential for modal shifts to occur.

For non-work trips, the modal splits have been assumed to remain unchanged between 1984/85 and 2000. This assumption is based on several factors which affect non-work travel. First, the non-work trip represents the smallest component (about 29%) of travel during the peak period. As many of the trips are discretionary, people making the trip have the flexibility to decide to not take the trip or to make it during the off-peak period. Also non-work trips are made on a more irregular basis. The trip maker is therefore likely to be less familiar with transit options available. Finally non-work trips are more likely to involve more than one person, making auto use more economically attractive when compared to transit (hence ridesharing is an attractive alternative for non-work trips). As a result of these factors, especially the flexibility in making travel decisions, non-work trips are considered less likely to shift modes.

Work trips, because of the regularity of the trip, the congestion experienced during peak travel times, and the cost of long-term parking, are much more susceptible to modal shifts. The extent of modal shifting has been estimated on a corridor by corridor basis. In the North and South bay corridors, the two corridors where changes in work travel behavior are expected to occur, the auto occupancy is estimated to increase by about nine to ten percent and the overall transit shares are expected to increase by about 12 percent. The increases in transit share are higher than what was projected to occur between 1981/82 and 2000 in the Downtown Plan EIR; however, the significance of this shift is minimized if the reduction of transit ridership between 1981/82 and 1984/85 and the larger survey area for the SOM analysis is taken into account.

The following discussion focuses on the peak period, but the same approach was used in establishing modal shifts for the peak hour.

North Bay In 1984/85 vehicular travel on the Golden Gate Bridge was observed to be at 89 percent of capacity during the peak period./16/ If year 2000 mode splits for survey area travel remain the same as they were in 1984/85, vehicular demand on the Golden Gate Bridge would be expected to exceed capacity by approximately 1,700 trips or 12 percent (112 percent of capacity). If the number of vehicular trips generated by the SOM and C-3 District survey area is held constant at 1984/85 levels (meaning commuter shift to carpools and transit) and only the regional component is allowed to grow (20 percent growth as estimated from MTC trip tables)/17/traffic demand on the bridge in the year 2000 is projected to equal the capacity.

To achieve this balancing of supply and demand, shifts in auto occupancy and transit share would have to occur. Conservative estimates were made as to the amount of shift likely to occur. It was assumed that a seven percent increase in the average auto occupancy for all trips generated from the survey area was a reasonable increase given the constraints of the roadway. The average auto occupancy for work trips was assumed to

shift from 1.38 to 1.51, and the transit share of work trips, from 51.3 to 63.7 percent. It is assumed that all trips shifted to transit would shift to Golden Gate buses rather than onto ferries due to the nature of constrained access to the ferry system at the Marin County end. With the modal shifts of survey area travel, the total projected demand (including that from the non-survey area) for vehicular trips on the Golden Gate Bridge would approximate its capacity.

Capacity increases were assumed for Golden Gate buses and ferries, while the capacity of the Tiburon Ferry was expected to remain at 1984/85 levels. The number of seats on Golden Gate buses were expected to increase by 2,600 or 31 percent, and the number of seats on the ferry to increase by 900 or 39 percent./18/ The underlying assumption for these figures is that the transit district would add service to accommodate increasing demand. Golden Gate Transit has expressed a commitment to meeting new service demands in the long run, even though short range responses to decreasing demand have resulted in service cuts.

East Bay The 1984/85 vehicular demand at the Bay Bridge screenline was observed to be at 95 percent of capacity during the PM peak period./19/ If mode splits for all survey area travel remain constant through the year 2000, the Bay Bridge vehicular demand would be expected to be at 138 percent of capacity or exceeding capacity by 8,000 vehicles by 2000. If the number of vehicular trips generated by the survey areas is held constant between 1984/85 and 2000 then the excess vehicular demand is substantially reduced. However, due to growth in the regional travel component (an estimated 38 percent based on MTC trip table) traffic demand on the bridge in the year 2000 would still be expected to be at 23,200 or 119 percent of capacity during the peak period, resulting in congestion levels that are projected to last for about four hours. In this corridor solutions to this excess regional demand would have to be explored on a regional basis.

To hold the SOM and C-3 survey area vehicle trips at 1984/85 levels, substantial shifts in modal shares would have to be achieved. Given the constraints of the bridge capacity and the already high levels of ridesharing in this corridor, a 6 percent increase in the average auto occupancy for all trips was assumed to be reasonable. Assuming no changes to non-work travel behavior, to achieve an increase in auto occupancy, the work trip auto occupancy would have to increase from 2.16 to 2.37. This would also have to be accompanied by an increase in transit share for work trips, from 68.4 to 79.6 percent. All trips shifted to transit were assumed to use BART. This is consistent with current regional policy that new transit demand in the transbay corridor should be accommodated on BART.

Both BART and AC Transit were assumed to have additional seating capacity by the year 2000. A conservative estimate of 900 new seats or a 7 percent capacity increase was assumed for AC Transit. While AC Transit is not currently in an expansion mode, this modest increase (a return to 1981 levels of service) was assumed reasonable in light of projected increasing demands for service from the transit operator./20/ By contrast, the number of seats on transbay BART trains was projected to increase by 63 percent or 11,900 seats./21/ To achieve this level of service it was assumed that 46 trains would operate in the peak two hour period, with an average of 9.3 cars per train. Trains would operate on 2.25 minute headways during the peak hour, but would achieve only 3.0 minute headways in the second peak hour.

South Bay The screenline selected for the south bay corridor was the San Francisco/San Mateo county line. The 1984/85 vehicular demand at this screenline for the combined Highway 101 and I-280 facilities was 77 percent of capacity./22/ If modal splits for survey area travel remain constant through the year 2000, and peaking characteristics remain stable, the vehicular demand at this screenline would be expected to be at 92 percent of capacity in 2000. These preliminary projections

indicate an unbalanced demand between the two facilities with Highway 101 at 110 percent of capacity and I-280 at only 74 percent of capacity. For the South Bay analysis, the additional trips on Highway 101 were assumed to shift outside of the peak two hour period as it was estimated that there would be adequate room at the screenline to accommodate these trips during the peak three hour period (in the North Bay and East Bay corridors there was not adequate capacity outside the peak two hour period to accommodate a temporal rather than a modal shift).

With the temporal shift for vehicular travel on Highway 101, the year 2000, screenline demand was projected to be reduced to 87 percent of capacity during the peak period. I-280 would operate at 74 percent of capacity; Highway 101, the more heavily utilized facility, would operate at 100 percent of capacity. An alternative scenario to the temporal shift of vehicular travel would be a balancing of travel demand between the two facilities, with I-280 carrying a larger percentage of travel from the survey area. This type of shift was not analyzed, but the capacity is available on I-280.

It has been stated that adequate corridor capacity exists at the county line to accommodate current and future travel demand; however, the Highway 101/I-280 interchange actually functions as the bottleneck on these two facilities within San Francisco County. For the purposes of this analysis it was assumed, that with opportunities existing for bypassing the 101/280 bottleneck via local streets in the city, the capacity at the county line would be the ultimate capacity constraint for vehicle trips travelling to the South Bay. While it is not condoned by city policy, auto trips in this corridor certainly have ample opportunity for diversion to the local street network; therefore it was considered an appropriate assumption in this transportation analysis. Under an alternative scenario, if commuters to the downtown area choose to shift to transit to avoid the bottleneck at the 101/280 interchange and congestion further south on Highway 101, ample transit capacity would be

available to meet the increased demand.

Capacity increases were assumed for all three transit carriers in the South Bay corridor. SamTrans was projected to increase the number of seats by an average of 5 percent annually (based on historic growth trends) for a total increase of 2,500 seats or 96 percent./23/ An increase of 8 percent or 500 seats was assumed on Caltrain between 1984/85 and 2000. This service increment assumes operation of 66 trains daily with 12 trains operating in the peak period./24/

BART Westbay service improvements are directly linked to increases in demand. The amount of service that could potentially be provided in this corridor is equivalent to the amount of service provided in the Transbay Tube. Because the demand in this corridor is substantially less than that in the transbay corridor, the amount of service to be provided will depend on the number of trains that can be stored at the new Daly City storage yard. BART staff have projected Westbay service to increase at approximately 1 percent annually. By 2000 service would increase by 16 percent or 2,500 seats./21/

San Francisco No modal shifts in San Francisco screenline travel were assumed between 1984/85 and 2000. The grid pattern street network in the city provides virtually unlimited travel choices for auto drivers trying to avoid congestion. Therefore, for the purposes of this analysis the roadway system in the city was not considered to be a capacity constraint that would prompt modal shift decisions. Growth in MUNI travel demand is strictly attributable to population and employment growth in the city.

Passenger capacity of the MUNI fleet is expected to increase moderately between 1984/85 and 2000. A total of 3,500 additional seats are projected at the MUNI screenlines for a combined growth rate of 7 percent./25/ The northeast, northwest, and southeast screenlines are expected to increase seats by 5 percent, while the southwest screenline

which includes all the MUNI Metro lines, is expected to increase 10 percent. For MUNI the actual passenger capacity increases will exceed 7 percent as the fleet is transitioned to vehicles with higher ratios of standing room to seats. MUNI will be able to carry a greater number of passengers on their transit vehicles although fewer passengers will be seated.

Non-Survey Area Travel

Estimates for non-survey area transit travel were based on MTC trip tables for regional travel, and ratios of regional to San Francisco downtown area employment; the entire Northeast quadrant of the city referred to as Superdistrict #1 in MTC's regional zonal classification, of which the SOM/F and C-3 district survey area is a major component./5/ These two sources provide a range of reasonableness for estimating non-survey area travel; they do not provide an absolute estimate of non-survey area trip-making.

The MTC trip tables are based on a 1981 regional travel behavior survey conducted by MTC and are calibrated for the base year of 1980. These tables provide a basis for estimating the relative contributions of travel at the screenlines of the survey area (as a component of Superdistrict #1) and the non-survey area (including the remainder of San Francisco and the Bay Area region).

A second point of reference for establishing the split between the survey area and the non-survey area travel was employment. It was assumed that the contribution of the SOM/F and C-3 survey area to the transit ridership at screenlines would approximate the ratio of survey area employment to Super District #1 employment, with some room for variation to account for through trips (trips generated outside the survey area) that might occur. The survey area was estimated to constitute within a range of 75 to 82 percent of travel at the transit screenlines during the peak hour and 75 to 85 percent during

the peak period. The survey area contribution varies by carrier owing to a greater or lesser proportion of trips estimated to originate outside the survey area.

Non-survey area vehicular travel was estimated using the same base data from MTC; however, the regional vehicular screenlines were expected to carry significant volumes of through traffic. The survey area was estimated to constitute within a range of 36 to 39 percent of vehicular travel at the screenlines during the peak hour and 32 to 40 percent of vehicular travel at the screenlines during the peak period. Estimates from MTC trip tables indicate that approximately 60 to 65 percent of screenline vehicular traffic is generated from outside of the downtown San Francisco area.

The relationship between survey area and non-survey area travel is finalized in the model calibration phase for the base year, 1984/85, condition. The non-survey area travel for year 2000 is then estimated by applying growth rates developed from the MTC trip tables for each of the travel corridors. In this manner growth for the rest of the region and San Francisco outside of the survey area can be estimated independent of growth projected for the SOM/F and C-3 survey area.

INTERSECTION ANALYSIS

Intersection analysis was conducted for eight intersections in the SOM/F and C-3 survey area. These intersections were selected on the basis of two criteria: proximity to freeway ramps and location along major traffic or transit streets in the downtown area. Each of these intersections is critical in terms of assessing the overall ability of the downtown area street network to accommodate increased growth.

Volume-to-capacity (V/C) ratios and levels of service were calculated for 1984/85 and 2000 for each of the intersections based on the Circular 212

methodology./26/ Table 7 describes the six levels of service and the V/C ratios associated with each category.

The 1984/85 analysis was based on field counts conducted for each of the eight intersections. To assess future traffic conditions, projections of travel growth were made at each intersection. Primary growth factors were developed for each approach of the intersection based on travel growth projected within the SOM/F and C-3 survey area based on vehicular travel growth projected in the transportation model. Secondary growth factors were developed to account for the additional traffic that might pass through these South of Market intersections as a result of growth in Mission Bay and in the region. Both sets of growth factors were applied to the existing intersection counts to estimate future travel demand. The aggregate growth rates for intersections are enumerated in Table 8.

PARKING DEMAND ANALYSIS

Estimates of long and short-term parking demand for the base case and future year were based on the number of vehicular trips projected from the SOM/F and C-3 survey area (including parking demand generated from the Yerba Buena Center). Because of the proximity of these two districts and the propensity for employees working in the C-3 District to use the South of Market as a cheap parking reservoir, supply and demand computations were calculated for the area as a whole in addition to providing estimates for just the SOM/F survey area.

Long-term demand was projected by applying an employee absenteeism factor and a turnover rate to the total outbound vehicular work trips. The .88 absenteeism factor was derived from the SOM/F and the C-3 District surveys./4/ The 1.36 turnover rate represents an average turnover rate for work trips in a city the size of San Francisco./27/ Short-term parking demand

TABLE 7: VEHICULAR LEVELS OF SERVICE AT SIGNALIZED INTERSECTIONS

<u>Level of Service</u>	<u>Description</u>	<u>Volume/Capacity (V/C) Ratio /1/</u>
A	Level of Service A describes a condition where the approach to an intersection appears quite open and turning movements are made easily. Little or no delay is experienced. No vehicles wait longer than one red traffic signal indication. The traffic operation can generally be described as excellent.	0.00 - 0.60
B	Level of Service B describes a condition where the approach to an intersection is occasionally fully utilized and some delays may be encountered. Many drivers begin to feel somewhat restricted within groups of vehicles. The traffic operation can be generally described as very good.	0.61 - 0.70
C	Level of Service C describes a condition where the approach to an intersection is often fully utilized and back-ups may occur behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so. The driver occasionally may have to wait more than one red traffic signal indication. The traffic operation can generally be described as good.	0.71 - 0.80
D	Level of Service D describes a condition of increasing restriction causing substantial delays and queues of vehicles on approaches to the intersection for short durations within the peak period. However, there are enough signal cycles with lower demand such that queues are periodically cleared, thus preventing excessive back-ups. The traffic operation can generally be described as fair.	0.81 - 0.90
E	Capacity is reached at Level of Service E. It represents the most vehicles that any particular intersection can accommodate. At capacity there may be long queues of vehicles waiting up-stream of the intersection and vehicles may be delayed up to several signal cycles. The traffic operation can generally be described as poor.	0.91 - 1.00
F	Level of Service F represents a jammed condition. Back-ups from locations downstream or on the cross street may restrict or prevent movement of vehicles out of the approach under consideration. Hence, volumes of vehicles	1.00+

passing through the intersection vary from signal cycle to signal cycle. Because of the jammed condition, this volume would be less than capacity.

/1/ Capacity is defined as Level of Service E.

SOURCE: San Francisco Department of Public Works, Traffic Division, Bureau of Engineering from Highway Capacity Manual, Highway Research Board, 1965.

was estimated by applying a turnover rate of 8 to the total outbound non-work trips generated from the survey area. This rate is based on an average length of stay of 1.5 hours for a non-work trip and is applied over a 12 hour day./27/

SERVICE VEHICLES

Average hourly parking demand for service vehicles was estimated for the SOM survey area based on stopping rates and parking information from the Center City Pedestrian and Goods Movement Study./28/

PEDESTRIAN CIRCULATION

Pedestrian circulation analysis was conducted at three intersections within the South of Market survey area. Counts were conducted by the Department of

TABLE 8: AGGREGATE INTERSECTION GROWTH RATES BETWEEN 1984/85 AND 2000

<u>Intersection</u>	<u>Percentage Growth</u>
Third and Market	28%
Mission and Beale	13%
First and Mission	24%
First and Harrison	20%
Fourth and Harrison	30%
Seventh and Harrison	22%
Fifth and Bryant	46%
Sixth and Bryant	--/1/

/1/ With the opening of the new ramp at 5th/King to I-280 traffic is assumed to equalize between the two ramps; 6th and Brannan is not forecast to experience new growth.

SOURCE: San Francisco Department of City Planning

City Planning in 1985./29/ The 2nd & Folsom and 9th & Folsom locations were selected because they fall on streets that have been identified as pedestrian corridors in the South of Market Plan. The location at 4th & Townsend was selected because it is the focal point for pedestrian access to the Caltrain station and is probably the most heavily used pedestrian intersection in the SOM survey area.

To estimate future pedestrian flows at these intersections, growth factors were developed on the basis of overall employment growth for each subarea of SOM and applied to current counts. The analysis also took into account the expected increases in pedestrian volumes resulting from increases in Caltrain ridership at the 4th and Townsend intersection. Level of service analysis was conducted for the base and future year.

Measurement of pedestrian activity is based on an average flow rate of pedestrians per foot of (effective) sidewalk width per minute (p/f/m). These rates have been divided into categories indicating the degree of congestion. The categories and the corresponding flow rates are shown in Table 9.

Total sidewalk width is measured as the distance from curb to building; effective width is calculated by subtracting the width occupied by obstructions from the total width. For example, a 10 foot sidewalk may have a much narrower effective width if trees, parking meters, or poles block part of the sidewalk for pedestrian movement. Pedestrians per foot per minute are calculated by dividing the number of pedestrians counted (pedestrians passing a specific point on a sidewalk or crosswalk in a specific period of time) by the length of the count period (in minutes). Pedestrians per minute is then divided by the effective width of the sidewalk at the point the count was conducted to obtain the pedestrians/foot/minute as an indicator of operating conditions.

TABLE 9: PEDESTRIAN FLOW REGIMES

<u>Flow Regime</u>	<u>Walking Speed Choice</u>	<u>Conflicts</u>	<u>Average Flow Rate (p/f/m)/1/</u>
Open	Free Selection	None	0.0 - 0.5
Unimpeded	Some Selection	Minor	0.5 - 2.0
Impeded	Some Selection	Indirect Interaction	2.0 - 6.0
Constrained	Some Restrictions	Multiple	6.0 - 10.0
Crowded	Restricted	High Probability	10.0 - 14.0

-----Design Limit - Upper Limit of Desirable Flow-----

Congested	All Reduced	Frequent	14.0 - 18.0
Jammed	Shuffle Only	Unavoidable	--/2/

/1/ p/f/m/ is pedestrians per foot of sidewalk width per minute

/2/ Under Jammed Flow, the flow rate degrades to zero at complete breakdown.

SOURCE: Pushkarev and Zupan, Urban Space for Pedestrians, 1975.

FOOTNOTES

- 1 Recht Hausrath & Associates, May 23, 1986 memo, "1985 Employment and Space Estimates for South of Market EIR" (last revision 4/21/87) and September 24, 1986 memo, "Employment Forecasts and Residence Patterns Estimates for South of Market EIR."
- 2 Recht Hausrath & Associates, July 2, 1986 memo, "1985 Residence Patterns for South of Market EIR" (last revision 4/24/87) and September 24, 1986 memo, "Employment Forecasts and Residence Patterns Estimates for South of Market EIR."
- 3 South of Market data contained in South of Market/Folsom Employee Survey: Supplemental Data Analysis, September, 1985, Barton-Aschman Associates, Inc., Recht Hausrath & Associates, and Environmental Science Associates, Inc.. C-3 data from The Downtown Employer/Employee survey conducted by Recht Hausrath & Associates, 1981/82.
- 4 ESA distributed a visitor postcard survey at seven businesses in the South of Market in conjunction with their September 1985 trip generation survey. A summary of the results are available on file at the Department of City Planning. Also, see Footnote #7.
- 5 1980 Regional Travel Characteristics, Working Paper 8, 1981 MTC Travel Survey, Metropolitan Transportation Commission (MTC), June 1983 and 1980 Regional Travel Characteristics, Appendix 6.0, Working Paper 8, 1981 MTC Travel Survey, MTC, October, 1983. This information was not available prior to the time when the calibration of the Downtown Plan transportation model was initiated.
- 6 Downtown Plan EIR EE81.3 and Downtown Plan EIR, Volume 2: Technical Appendix J, Department of City Planning, October 18, 1984.
- 7 Environmental Sciences Associates, Inc. (ESA), September 10, 1985 correspondence reporting results of SOMA Trip Generation Survey.
- 8 ESA conducted a visitor survey on three blocks in the Embarcadero Center on June 17, 1982. The results are shown in the Downtown Plan EIR. See Footnote #6 above for full citation.
- 9 Screenline counts were collected from each of the transit operators. Based on conversations with transit agency staffs and correspondence, the following verification was received for the 1984/85 counts:

AC Transit - April 17, 1986 correspondence from Theodore H. Reynolds, Assistant Manager Research & Planning Department.

BART - January 30, 1986 correspondence from Ward Belding, Supervisor, Office of Research.

California Department of Transportation - May 27, 1987 correspondence

from Burch C. Bachtold, District Director.

Golden Gate Bridge, Highway and Transportation District - February 12, 1986 correspondence from Jerome M. Kuykendall, Director of Planning and Policy Analysis.

MUNI - April 7, 1986 memorandum from K.L. Wong, MUNI Environmental Review Coordinator.

SamTrans - January 30, 1986 phone conversation with Gregory Kipp, Service Planner.

Tiburon Ferry - February 26, 1986 correspondence from Carolyn Horgan, Supervisor, Dispatch, Red & White Fleet.

- 10 Metropolitan Transportation Commission (MTC), Regional Transportation Improvement Plan (RTIP) 1986-1987, April 23, 1986, Page A-6.
- 11 MTC, RTIP, op. cit., pages A-3 and A-4.
- 12 MTC, RTIP, op. cit., page C-53.
- 13 MTC Regional Transportation Plan (RTP), November 1986, page 39.
- 14 MTC, RTP, op. cit., page 37.
- 15 The letters submitted by the transit operators are on file at the San Francisco Department of City Planning, 450 McAllister Street.
- 16 Golden Gate Bridge base year traffic volumes taken from 1984 AM Peak Hour and Peak Period counts collected by the Bridge District. Counts confirmed in March 19, 1986 phone conversation with Allan Zaradnic, Golden Gate Bridge, Highway, and Transportation District (GGBHTD).
- 17 MTC 1/2/86 Memorandum to the File, Chuck Purvis, "Development of Year 2000 Fratar Commuter and Total Worker Matrices."
- 18 Future year capacity for Golden Gate Transit confirmed in May 5, 1987 correspondence from Jerome M. Kuykendall, Director of Planning and Policy Analysis, GGBHTD.
- 19 Bay Bridge base year traffic volumes taken from 1985 PM peak hour and period counts, Traffic Survey Series MA-62, Bay Bridge Toll Plaza, Metropolitan Transportation Commission and California Dept. of Transportation, District 4.
- 20 Future year capacity for AC Transit was confirmed in June 11, 1987 correspondence from Theodore H. Reynolds, Assistant Research & Planning Manager, AC Transit.
- 21 Future year capacity for BART was confirmed in May 29, 1987 correspondence from Howard L. Goode, Department Manager Planning, Budget & Research, BART.

- 22 Traffic counts on Highway 101 and I-280 were conducted by Barton-Aschman Associates, Inc. (BAA) in March 1987.
- 23 Future year capacity for SamTrans was confirmed in April 28, 1987 correspondence from Richard D. Gee, P.E., Director Planning/Engineering, SamTrans.
- 24 Future year capacity for Caltrain was confirmed in May 27, 1987 correspondence from Burch C. Bachtold, District Director, California Department of Transportation, District 4.
- 25 Future year capacity for MUNI was confirmed in May 5, 1987 memorandum from Doug Wright, Director of PUC Planning.
- 26 Transportation Research Board, Interim Materials on Highway Capacity, Circular 212, January 1980.
- 27 Institute of Traffic Engineers, Transportation and Traffic Engineering Handbook, Second Edition, 1982.
- 28 Wilbur Smith and Associates, Center City Pedestrian and Goods Movement Study, for the City and County of San Francisco, Department of City Planning, September 1981.
- 29 Pedestrian counts conducted by the San Francisco Department of City Planning, August 1985.

APPENDIX D: AIR QUALITY

SAN FRANCISCO AIR POLLUTANT SUMMARY, 1984-1986

STATION: 900 23rd Street, San Francisco

<u>POLLUTANT:</u>	<u>STANDARD</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
OZONE (O₃) (Oxidant)				
1-hour concentration, ppm/a/				
Highest hourly average	10/b,e/	0.10	.09	.07
Number of excesses of state standard		1	0	0
Expected Annual Excess (federal)/d/		-	.3	0
CARBON MONOXIDE (CO)				
1-hour concentration, ppm				
Highest hourly average	20/b,f/	-	-	-
Number of excesses of state standard		0	0	0
8-hour concentration, ppm				
Highest 8-hour average	9/b,c/	10.8	15/g/	12.6/g/
Number of excesses of state standard		1	3/g/	2 /g/
TOTAL SUSPENDED PARTICULATE(TSP)				
24-hour concentration, ug/m ³ /a/				
Highest 24-hour average	100/b,h/	-	-	-
Number of excesses of state standard/g/		5	-	-
Annual concentration, ug/m ³				
Annual Geometric Mean	60/b,h/	60	62	52
Annual excess of standard		Yes	1	0
LEAD (Pb)				
30-day concentration, ug/m ³				
Highest 30-day average	1.5/b/	-	-	-
Number of excesses of standard		-	-	-
NITROGEN DIOXIDE (NO₂)				
1-hour concentration, ppm				
Highest hourly average	0.25/b/	0.14	0.12	0.11
Number of excesses of standard		0	0	0
SULFUR DIOXIDE (SO₂)				
24-hour concentration, ppm				
Highest 24-hour average	0.05/b/	0.03	0.03	0.01
Number of excesses of standard/i,j/		0	0	0

/a/ ppm: parts per million. ug/m³: micrograms per cubic meter.

/b/ State standard, not to be equaled or exceeded, except for CO standards, which are not to be exceeded.

SAN FRANCISCO AIR POLLUTANT SUMMARY, 1984-1986 (Continued):

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- /c/ Federal standard, not to be exceeded more than once per year, except for annual standards, which are not to be exceeded.
 - /d/ Expected Annual Excess is a three-year average of annual excesses of the federal standard.
 - /e/ The federal one-hour ozone standard is 12 ppm.
 - /f/ The state one-hour CO standard was revised from 35 ppm to 20 ppm in January 1983. The federal one-hour standard remains 35 ppm. The one-hour CO standard was never exceeded during the year.
 - /g/ These represent maximum street-level CO levels measured at a micro-scale site on Ellis Street, rather than at the 900-23rd Street monitoring station.
 - /h/ The California ARB has redefined the state particulate standard to apply to "inhalable" particulates only (i.e., those which have a diameter less than ten microns). The new standards are 50 ug/m³ for 24-hour averages and 30 ug/m³ for the annual geometric mean. No data is currently available on the particle size distribution of the TSP sampled at the San Francisco monitoring station.
 - /i/ Number of observed excess days (measurements taken once every six days).
 - /j/ Exceeding the SO₂ standard is a violation only if a concurrent excess of the state ozone or TSP standards occurs at the same station. Otherwise, the federal standard of 0.14 ppm applies.

SOURCE: BAAQMD, 1981-1983, Air Quality in the San Francisco Bay Area; and California ARB, 1981 - 1984, California Air Quality Data.

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